THE Journal

FEBRUARY

1951

Fundamentals of endodontic practice—Ostrander....129
Direct wax patterns of three-quarter crowns—Bartelle....138
School dental health program, New York City—Strusser....143
Mental foramen injection—Cook....148
Partial dentures with precision attachments—Grubb....154
Balancing occlusion of partial dentures—Collett....162
Navy dental intern and residency programs—Taylor....169
Dental intern and dental residency training—Houghton....175
Caries control study using ammoniated dentifrice—Kerr....180
Newburgh-Kingston caries fluorine study—Ast....188
Reports of councils....196
Editorials....208
Washington news letter....212
News of dentistry....214
International correspondence....230
Reader comments....232
Book reviews....234
Current literature....239

VOLUME 42

NUMBER 2

Now you can improve the appearance of your best dentures

trubyte

teeth

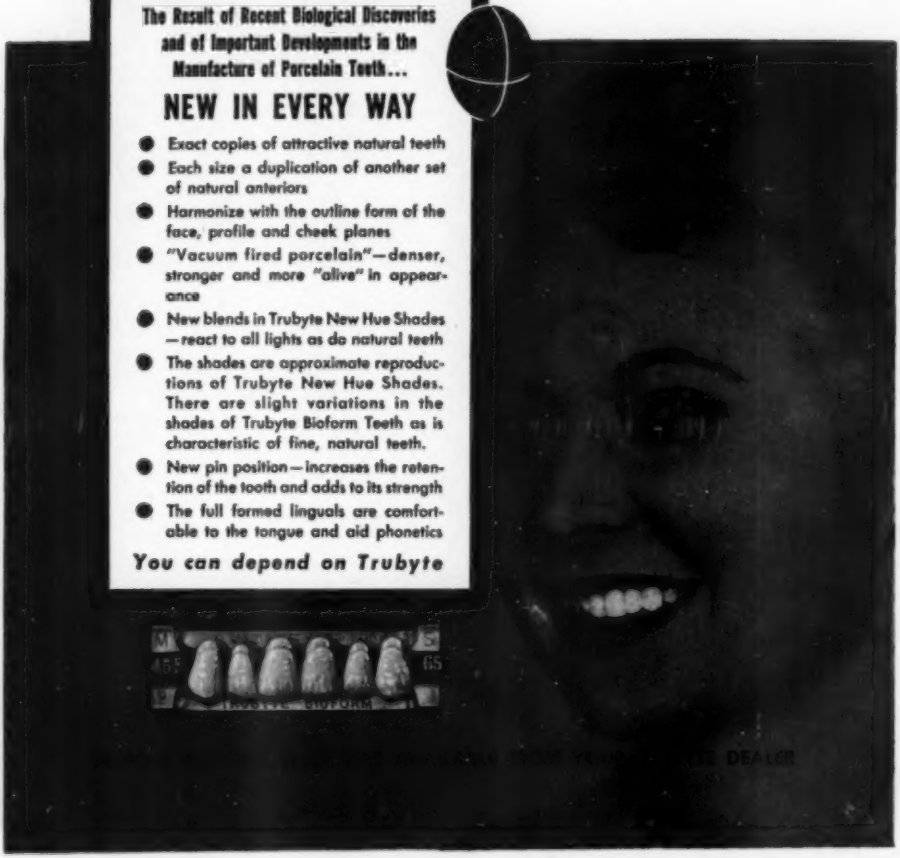
Because the forms in Trubyte Bioform Teeth are exact copies of attractive, natural teeth, and because the new blends of Trubyte New Hue Shades are so *alive* in appearance, you can produce dentures that are decidedly better looking; much more natural in appearance. Your first denture with Trubyte Bioform Teeth will convince you that such a splendid result was never before possible.

The Result of Recent Biological Discoveries and of Important Developments in the Manufacture of Porcelain Teeth...

NEW IN EVERY WAY

- Exact copies of attractive natural teeth
- Each size a duplication of another set of natural anteriors
- Harmonize with the outline form of the face, profile and cheek planes
- "Vacuum fired porcelain"—denser, stronger and more "alive" in appearance
- New blends in Trubyte New Hue Shades —react to all lights as do natural teeth
- The shades are approximate reproductions of Trubyte New Hue Shades. There are slight variations in the shades of Trubyte Bioform Teeth as is characteristic of fine, natural teeth.
- New pin position—increases the retention of the tooth and adds to its strength
- The full formed linguals are comfortable to the tongue and aid phonetics

You can depend on Trubyte



The Journal of the American Dental Association, Vol. 42, No. 2. Published by the American Dental Association, 222 E. Superior St., Chicago 11, Ill. Yearly subscription $7.00 for U. S. and possessions; $8.00 for foreign countries. Single copy seventy-five cents. Entered as second-class matter, December 31, 1947, at the postoffice at Chicago, Ill., under the act of March 3, 1879. Published monthly. Copyright 1951 by the American Dental Association. The Journal of the American Dental Association is indexed in the Index to Dental Literature and, in part, in the Quarterly Cumulative Index Medicus, Biological Abstracts and Chemical Abstracts.

DEE GOLDS are the result of long metallurgical research designed to provide excellent working properties and to insure many years of service. That's why you will find DEE GOLDS most satisfactory for both you and your patient. You'll find it that way every time — because scientific control of production assures unvarying uniformity. We will be glad to send you a folder listing DEE GOLDS and their physical properties upon request.

OFFICE AND PLANT
1900 WEST KINZIE STREET

HANDY & HARMAN
DEE GOLD
PRECIOUS METALS

REFINERS & MFRS.
CHICAGO, 22, ILLINOIS

OUR CANADA OFFICE — 141 JOHN ST., TORONTO

M
45F
P
S
65

finest...

trubyte

teeth

these same natural looking dentures will be more serviceable and more durable.

And because the natural linguals of Trubyte Bioform Teeth are more comfortable to the tongue, phonetics will be aided and denture consciousness minimized.

Trubyte Bioform Teeth can be a powerful stimulant to the development of your prosthetic practice.

The Result of Recent Biological Discoveries and of Important Developments in the Manufacture of Porcelain Teeth . . .

- Exact copies of attractive natural teeth
- Each size a duplication of another set of natural anteriors
- Harmonize with the outline form of the face, profile and cheek planes
- "Vacuum fired porcelain" — denser, stronger and more "alive" in appearance
- New blends in Trubyte New Hue Shades — react to all lights as do natural teeth
- The shades are approximate reproductions of Trubyte New Hue Shades. There are slight variations in the shades of Trubyte Bioform Teeth as is characteristic of fine, natural teeth
- New pin position — increases the retention of the tooth and adds to its strength
- The fully formed linguals are comfortable to the tongue and aid phonetics

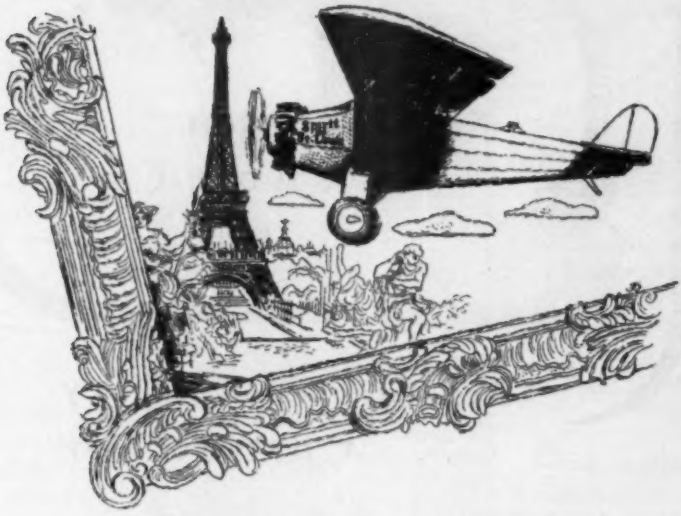
You can depend on TRUBYTE

TEETH ARE AVAILABLE FROM YOUR TRUBYTE DEALER

Artificial
It's a far cry from the old "artificial tooth" to the supremely natural modern restoration. Only ART remains today. And the art of fabricating completely natural restorations is made more simple and more certain by the use of Steele's Flatback New Hue facings with Steele's Gold Faced backings. These backings will not "shadow through." The original shade of the facing is preserved, hence shade matching is simplified. And the resulting restoration harmonizes perfectly with surrounding tissue and adjacent natural teeth – even to the lifelike sparkle.
THE COLUMBUS DENTAL MFG. CO.
COLUMBUS 6, OHIO
47 years of progress in the mechanics and esthetics of restorative dentistry
Steele's
FLATBACK
NEW HUE FACINGS
GŌL-FĀC BACKINGS

Do you remember...

Lindbergh's New York to Paris flight — in 1927?



It was just one year later—
In 1928—that Pepsodent created this slogan—

See your dentist twice a year

—a slogan now firmly impressed on the minds of *millions* of Americans because Pepsodent advertising has repeated it *billions* of times!

Pepsodent
Division Lever Brothers Company

A LIGHT OF BEAUTY . . . A JOY TO USE

- ☆ Divided light source projects two converging beams that form a shadowless 3" x 8" pattern on operating area without striking the patient's eyes.
- ☆ Completely enclosed, scientifically designed head, reduces heat.
- ☆ Push-button switches in both insulated, plastic handles.
- ☆ X-ray viewer.
- ☆ Flexible arm holds any position steadily.

Try It and SEE

If you agree "A thing of beauty is a joy forever," then look to the Pelton S/M Dental Light. Its beauty will captivate you . . . *and your patients.* What's more, it's as efficient as it is beautiful. It puts cool, color-corrected, shadowless light where you want it, easily and quickly. Both optically and mechanically, the S/M Light is the finest in our long experience in providing better illumination for dentists. Let *your eyes* tell you . . . see it and try it at your dealer's or write for literature.

PELTON

THE PELTON & CRANE CO., DETROIT 2, MICHIGAN

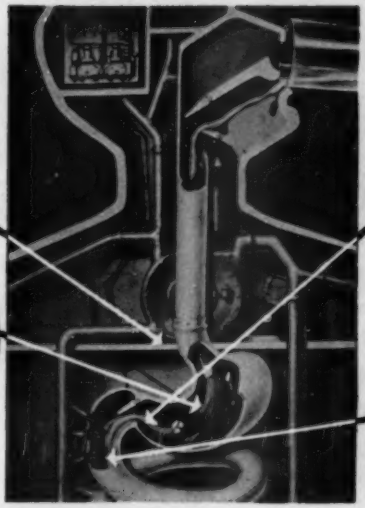
Give faster pain relief with BUFFERIN

ACTS TWICE AS FAST AS ASPIRIN

WITHOUT GASTRIC DISTRESS!

1. BUFFERIN enters the stomach here.

2. BUFFERIN exerts its antacid effect, lessening the possibility of gastric distress.



3. BUFFERIN helps dilate the pyloric valve, promptly leaves the stomach.

4. BUFFERIN's analgesic component is absorbed into the blood *twice as fast as aspirin*, relieves pain.

When you prescribe BUFFERIN to your patients you assure *faster relief of pain*. Clinical studies[1] show that within ten minutes after BUFFERIN is ingested, blood salicylate levels are as great as those attained by aspirin in twice this time. That is why BUFFERIN *acts twice as fast as aspirin*.

BUFFERIN has *greater gastric tolerance*. BUFFERIN's antacid ingredients provide protection against the gastric distress so often seen with aspirin.[1] BUFFERIN, therefore, is especially suited for use when prolonged use of salicylates is indicated.

1. *Effect of Buffering Agents on Absorption of Acetylsalicylic Acid. J. Am. Pharm. A., Sc. Ed. 39:21, Jan. 1950.*

In vials of 12 and 36 and bottles of 100. Scored for divided dosage. Each BUFFERIN tablet contains 5 grains of acetylsalicylic acid with optimal proportions of magnesium carbonate and aluminum glycinate.

BUFFERIN
is a trade-mark of the Bristol-Myers Company

Accepted COUNCIL ON DENTAL THERAPEUTICS AMERICAN DENTAL ASSOCIATION

A product of BRISTOL-MYERS COMPANY
19 West 50 St., New York 20, N. Y.

OF COURSE YOU KEEP YOUR JOURNALS

Then why not do it efficiently and inexpensively by using

A. D. A. JOURNAL FILING CASES

These cardboard cases, which are made especially to fit your ADA JOURNALS, are now available in an attractive dark blue, and are designed to conform with the JOURNAL's new format.

They are sold in sets of two, each of which will hold a complete volume (six issues). Numerals for the years 1950-1959 are included with each set. These are white on a blue ground, and are on gummed paper.

PRICE PER SET — 75c

AMERICAN DENTAL ASSOCIATION
222 E. Superior St., Chicago 11, Ill.

Enclosed is ..... for .....
sets ADA filing cases at 75c per set.

Name .....

Address .....

.....

JELENKO FRACTURE SPLINTS

Patented

Keep a Few Sets on Hand!

Every maxillary or mandibular fracture case is an emergency—no time to call your dealer. That's why so many dentists, hospitals, first aid clinics keep Jelenko Fracture Splints on hand. Proven by 20 years' use.

FEATURES

Ready-Made—Ready for Instant Use.
No Impressions Needed
Nothing to Assemble

EASILY APPLIED
(See Illustrations)

EASILY ADJUSTED

EASILY REMOVED

SAFE

As jaws are immobilized by rubber bands, patient can gain freedom in case of nausea or coughing by slipping off bands.

Each set includes 2 Arches, Ligature Wire, Elastic Bands.

PRICE PER SET

18 Kt. Cased Gold
$15.00

Special Nickel Silver Clinic Unit
$9.00

From Your Dealer

Write for booklet describing complete technic.

J. F. JELENKO & CO., INC.

Dental Golds & Specialties

136 West 52nd St., New York 19, U.S.A.

The real *key* to the problem of tooth decay

Recently completed clinical data again confirm the fact that the most important function in the prevention of tooth decay is regular cleansing of the teeth after eating plus regular biannual visits to the dentist.* In order to get your patients to cooperate with this most important function, it is necessary to have them use a tooth paste to their liking; one that tastes good, cleans efficiently and leaves the mouth feeling cool and refreshed. Kolynos Tooth Paste meets these specifications to the letter. When you recommend Kolynos Tooth Paste to your patients, you may be assured that you will invite their cooperation in the consistent and regular function of brushing their teeth after eating and will thus help to prevent tooth decay. For years Kolynos has been the choice of many discriminating dentists throughout the world. Won't you make it your choice too?

* Fosdick, L. S., The Reduction of the Incidence of Dental Caries. I. Immediate Tooth Brushing with a Neutral Dentifrice, J.A.D.A. Vol. 40, No. 2, February 1950.

Kolynos TOOTH PASTE

WHITEHALL PHARMACAL COMPANY • 22 East 40th Street, New York 16, N. Y.

Why take chances on the fit of a cast appliance, when it costs no more to be certain?

Why entrust all the painstaking skill you put into the preparation of a case to the variables of conventional casting procedures, when the testing-laboratory precision of the Dresch-developed REPLICAST technic is at your command?

In this ultra-scientific casting process the hazards of empirical methods are eliminated; the exact result of each step is definitely known in advance. And behind it lie more than thirty years of study and practical experience in partial denture construction.

Dentists from coast to coast are relying on REPLICAST precision removables to enhance the scope and prestige of their cast-appliance service. You, too, can enjoy relief from pre-insertion worries; mail the coupon or write for further particulars now.

REPLICAST ... A METHOD ... NOT A MATERIAL

The Dresch Laboratories Company
1009 Jackson Street—Toledo 1, Ohio

Tell me more about 'REPLICAST' precision removables.

Dr._____

*Street Address*_____

*City—Zone—State*_____

J-21

The NEW Crescent WIG-L-BUG

(Patented)

Here is the NEW, streamlined Model of the famous Wig-l-bug, the wonder electric-mortar-and-pestle that is placing amalgam work on a scientific basis. The dependable, trouble-free Wig-l-bug mechanism—that has proved so successful—is now housed in beautiful bakelite. And a New, accurate, easy-to-read electric timer has been added.

Requires only 7 to 10 seconds to triturate enough amalgam for the average filling. Saves time, prevents waste, produces uniformly perfect mixes with a smooth, fine texture. Use the Wig-l-bug with your preferred alloy.

Thru Your Dealer or Direct

Crescent DENTAL MANUFACTURING CO.
1839 South Pulaski Road, Chicago 23, Illinois

INSURANCE

FOR DENTISTS, PHYSICIANS, SURGEONS EXCLUSIVELY
Accident • Hospital • Sickness

ALL PREMIUMS COME FROM — PHYSICIANS SURGEONS DENTISTS — ALL BENEFITS GO TO

Cost has never exceeded amounts shown

$5,000.00 ACCIDENTAL DEATH $25.00 weekly indemnity, accident and sickness	**$8.00** Quarterly
$10,000.00 ACCIDENTAL DEATH $50.00 weekly indemnity, accident and sickness	**$16.00** Quarterly
$15,000.00 ACCIDENTAL DEATH $75.00 weekly indemnity, accident and sickness	**$24.00** Quarterly
$20,000.00 ACCIDENTAL DEATH $100.00 weekly indemnity, accident and sickness	**$32.00** Quarterly

Also hospital expense for members, wives and children at small additional cost

85c out of each $1.00 gross income used for members' benefit

$3,500,000.00
INVESTED ASSETS

$16,500,000.00
PAID FOR CLAIMS

$200,000.00 deposited with State of Nebraska for protection of our members

Disability need not be incurred in line of duty—benefits from the beginning day of disability

PHYSICIANS CASUALTY ASSOCIATION
PHYSICIANS HEALTH ASSOCIATION

40 years under the same management

400 FIRST NATIONAL BANK BUILDING — **OMAHA 2, NEBRASKA**

How chrome alloys differ... #1 in a series

look again...

ARE THEY ALIKE? TICONIUM'S method of duplicating your master model is vastly different from all other chrome alloys. First of all, hydrocolloid is used for accuracy. No coating or surface treatment is required. The duplicate model IS a duplicate of your master in every way. It is a simple, direct, accurate process!

This is only one of the exclusive, superior steps in the modern TICONIUM technique used only by your TICONIUM laboratories.

Ticonium *is different . . . better . . .* **SURE**

TICONIUM – 413 N. PEARL ST., ALBANY 1, N. Y.

PLEASE SEND BROADSIDE, "THE DIFFERENCE BETWEEN CHROME ALLOYS."

DR. _____

STREET _____

CITY _____ ZONE _____ STATE _____

S·S·White

ORALINE

MOUTH WASH

Marvelous New Plastic Bottle

CONVENIENT
ONE-HAND OPERATION.
JUST LIFT CAP, TILT,
SQUEEZE.
NON-BREAKABLE,
SPACE-SAVING.

NO WASTE. CAN'T CLOG
SPRAY-BOTTLE MECHANISM.

Contains 8 oz., makes 2 gals. of solution. Non-astringent in action, delightfully flavored! Order from your salesman.

The S. S. WHITE DENTAL MFG. CO.
211 So. 12th St., Phila. 5, Pa.

FREE! Prescription-Blank Pads. Write on Professional Letterhead.

Close-Up of Teeth Taken With Kine Exakta "V"

For Parallax-Free Dental Photography!

1950 KINE EXAKTA—MODEL V

35 mm. Single Lens Reflex Camera

For photographing conditions before and after treatment, cavities, inlays and bridgework, and for recording and for demonstrating oral treatment to patients. The indispensable aid of the progressive dentist! With f3.5 Zeiss Tessar "T" Coated Lens $180.00*
Penta Prism Eye Level Reflex Viewfinder 90.00*
Extension Tube Set 24.00
Microscope Adapter 29.50
*plus tax

FREE—Write Dept. 302 For Free Descriptive Booklet "V" on Camera & Accessories and Brochure On Close-Up Technique With Kine Exakta.

EXAKTA CAMERA COMPANY
46 W. 29th St., New York 1, N. Y.

Exclusive Sales And Service Organization In U.S.A. For Ihagee Camera Works, Germany

Copyright 1950, Exakta Camera Company, Inc.

THE
MEDICAL
PROTECTIVE
COMPANY
FORT WAYNE,
INDIANA

Professional Protection
Exclusively
since 1899

...recognized by patients
relied on by dentists

the only disposable fabric towel

soft, firm texture — cotton, rayon, cellulose, non-woven fabric

more hygienic — new towel for each patient

absorbent — suits every operative and surgical procedure

no glare — green stripes eliminate glare

convenient — folded ready for use and compact storage

economical — save on every towel

Order a Carton of 100 or 500 from your Dealer — and ask your salesman for the attractive quantity rate.

Dental Division

Johnson & Johnson

THE 16TH EDITION . . .

ACCEPTED Dental Remedies

IMPORTANT ADDITIONS AND REVISIONS

- New classification of products
- Revised provisions for acceptance of products
- Information on agencies responsible for drug standards
- Up-to-date listing of commercial products
- Current information on therapeutic agents
- Prescription writing

Available NOW

at only **$1.50**

GET THE FULLEST USE OF YOUR ADR . . .
SEND YOUR ORDER *TODAY* TO:

AMERICAN DENTAL ASSOCIATION
222 E. SUPERIOR ST. • CHICAGO 11, ILLINOIS

ada

THE NEW

CONTENTS:

7 Replica Powders *(Shade Nos. 20, 21, 22, 23, 24, 65, 67)*	$21.00
1 Replica Liquid	1.50
1 Shade Guide	3.75
VALUE	$26.25
7/1 Package	$19.75

ORDER THROUGH YOUR DEALER

COSMOS DENTAL PRODUCTS, INC. • MFRS. OF DE

SEVEN IN ONE PACKAGE OF

Replica is the proven, easiest-to-use plastic filling material! Ideally suited for mixing in a dappen dish, since it does not require spatulation! At the proper consistency, Replica clings tenaciously to cavity walls—*it stays in place!*

Clinicians have also found the properties of Replica to be of decided advantage in the cementation of inlays, crowns and bridges.

AS A FILLING MATERIAL: In clinics and in private practice during the past two years, thousands upon thousands of Replica fillings were made without a single report of a filling "washing out" falling out, leaking or causing pulp injury! Doctors also agree it is by far the easiest to mix and use.

AS A CEMENT: The unique plasticity of Replica coupled with its stability in oral fluids and its extremely fine film-thickness, present many advantages in the cementation of crowns, inlays and bridges. No galvanic action.

REPLICA IS ANOTHER COSMOS PRODUCT

NSENE "33" • 219 E. 44TH ST., NEW YORK CITY

For This Patient . . . . . .

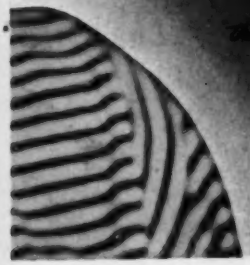
Comfortable Dentistry!

Freedom from fear of dental pain makes any patient more cooperative. This not only eases the dentist's job, but also advances the cause of better dentistry. In difficult or prolonged procedures, there's no better way of ensuring your patients' comfort than by the use of Novocain-Pontocaine-Cobefrin, for "N.P.C.'s" deep, dense anesthesia provides lasting protection against dental pain.

Enjoy the full benefits of working with comfortable patients — order "N.P.C." today from your local Cook-Waite dealer.

npc

REMEMBER — There's a Cook-Waite formula for every anesthetic purpose.



ON A
GREAT OCEAN LINER...
IT'S
Safety First
29 SEPARATE FIRE PREVENTION MEASURES
FIRE is the most dreaded of all catastrophes of the sea. The modern ocean liner takes no chances! A typical ship provides 29 individual fire prevention measures.
In a local anesthetic too...
SAFETY Is the first Consideration!

STRONG local anesthetic solutions may be as great a hazard as fire at sea. You can protect the health—*perhaps the very life*—of the patient by using a *safe local anesthetic!*

IT IS a general pharmacological rule that potency is directly proportioned to toxicity. Fortunately, Monocaine 2ME formula is an exception to the rule. This formula provides the potency of a 4% procaine solution with the safety of approximately 3% procaine (actually 2.66%). Induction of anesthesia with 2ME is rapid and the anesthesia is deep, smooth and safe.

MONOCAINE FORMULA 2ME
THE "SAFETY FIRST" LOCAL ANESTHETIC

MONOCAINE Formula 2ME was specifically developed for those cases in which anesthesia is difficult to obtain. While Monocaine 1½% is recommended for routine use, Monocaine 2ME is particularly advantageous for jacket crown preparation, pulp extirpation and the preparation of bridge abutments.

Assure greater local anesthetic potency without sacrifice of safety . . . specify Formula 2ME!

Accepted
COUNCIL ON DENTAL THERAPEUTICS
AMERICAN DENTAL ASSOCIATION

NOVOCOL CHEMICAL MFG. CO., INC.
291-23 Atlantic Ave., Brooklyn [illegible] N. Y.

AN OPEN LETTER TO THE DENTAL PROFESSION

Dear Doctor:

In the course of our fifteen years of service to the dental profession, we have seen and experimented with a great many techniques for denture construction. A number of these techniques seemed to have considerable merit, but up to now each one was disqualified for at least one of two reasons.

1) Our primary objection was that we did not feel we were in a position to judge a new technique. New methods, we argued, must first be tested and proved by the profession through long clinical use. 2) If this first tenet were satisfied, we advanced the second hypothesis that we, as a commercial organization, should not attempt to present a technique to the profession that could be presented equally well through normal professional channels. Because of these stringent requirements, we have never sponsored any specialized chair technique, but instead have devoted our energies strictly to the development of laboratory materials and methods for producing better cast restorations.

However, about one year ago we were shown a denture technique which aptly fulfilled all of our requirements. It is known as the Centrimetric System, developed by Mr. Nathan Opotow, President of the Opotow Dental Manufacturing Corp., with the full cooperation of members of the profession. Centrimetrics has been in clinical use for over ten years. Documented case histories and professional affidavits bear ample witness to its soundness in theory and practice. Our thorough investigation over the past year, through professional eyes, has heaped proof on proof that Centrimetrics is an authentic improvement over past methods.

One question remained in our minds: Why was the technique not in more general use? The answer was simple: Dental laboratories had to be trained to translate the work at the chair into finished full or partial dentures. To expedite the process of laboratory training, and to better serve the profession, a nation-wide organization was essential.

Therefore, we felt that the conditions surrounding Centrimetrics satisfied both of our prerequisites. And we are now engaged in installing Centrimetrics in Durallium laboratories all over the world.

You can well imagine the magnitude of our task, and we want to say frankly that it will take months to properly train and equip Durallium laboratories everywhere. But, in this letter, we want to make our plans known, and to introduce the name and general purpose of Centrimetrics. Many Durallium laboratories have already completed the Centrimetrics course, and are fully equipped to serve you now. We will be happy to let you know if the Durallium laboratory nearest you is among them. And we will be glad to send you full information about Centrimetrics, on request.

Sincerely yours,

DURALLIUM PRODUCTS CORPORATION

Joseph B. Wilk, President

THE 1951 A. D. A. APPOINTMENT BOOK

IS NOW AVAILABLE

If you aren't already on the standing order list, send in your order today.

EXCLUSIVE FEATURES

- ★ **A full week's appointments at a glance**
- ★ **Patient recall system**
- ★ **Catalog of library books**
- ★ **Catalog of dental health educational literature**
- ★ **National holidays**
- ★ **List of acceptable local anesthetics**
- ★ **List of certified dental materials**

Use This Order Blank

American Dental Association
222 E. Superior Street
Chicago 11, Illinois

Check the order you wish to place:

☐ Place my name on the standing order list to get the A.D.A. Appointment Book regularly each year beginning with the 1951 edition and bill me for $1.50. I understand this order is cancellable at any time.

☐ Just send me a copy of the 1951 book and bill me for $1.50.

Signed.....

.....
No. Street

.....
City Zone State

FEBRUARY 1951 THE Journal VOLUME 42 • NUMBER 2

AMERICAN DENTAL ASSOCIATION

Some fundamentals of successful endodontic practice

F. D. Ostrander, D.D.S., M.S., Ann Arbor, Mich.

Frequently in the past, and even occasionally in recent years, articles have been found in the dental literature which have made a blanket condemnation of all forms of root canal therapy. Fortunately such articles are seen far less frequently today because an ever growing number of dentists and physicians now realize that even as there are good and bad inlays, dentures, bridges and oral surgical procedures, so there are good and bad endodontic procedures. Thus it is as illogical to condemn all root canal therapy because some of it is done poorly as it would be to condemn all bridges, crowns, inlays or third molar extractions because some of them are faulty and cause extensive trouble for the patient.

A quarter of a century or more ago much of the root canal therapy practiced was very poor. The dentists and physicians who condemned that type of practice undoubtedly did a great service to dentistry, for it stimulated such men as Coolidge of Chicago (Loyola), Rickert of Michigan, and other of their more scientifically-minded contemporaries, in a search for a sound system of endodontic practice. From the efforts of these pioneers and their successors has come a new, scientifically controlled system of root canal therapy which merits and receives the respect and approval of a large segment of both the dental and medical professions. Furthermore, an ever-increasing number of the dental schools are establishing endodontic departments and there seems every reason to believe that the practice of good root canal therapy will grow even more rapidly in the next decade than it has in the past.

While there may be certain variations in the technic of endodontics as practiced and taught at various schools, there are a number of fundamental principles

Presented before the Section on Operative Dentistry, ninetieth annual session of the American Dental Association, San Francisco, October 19, 1949.

Associate professor of dentistry, University of Michigan School of Dentistry.

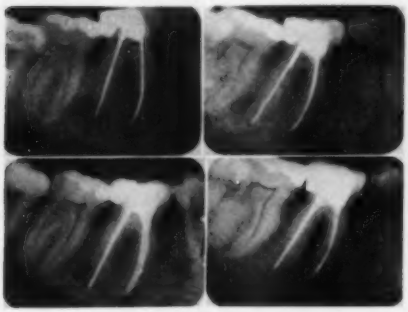


Fig. 1 • Healing of periapical areas about mesial and distal roots of mandibular first molar. No resection or curettage performed. Silver point root canal fillings used

which are generally accepted and to which the practitioner of endodontics must strictly adhere if he is to obtain uniformly successful results. It is these fundamental requirements which I wish to discuss rather than the details of any one technic.

DIAGNOSIS

The first major requirement for successful endodontic practice is an accurate diagnosis and appraisal of every case. Although a large percentage of teeth can be saved by root canal therapy, by no means 100 per cent of pulp-involved teeth are candidates for endodontic procedures. Nothing can be more discouraging than to start a case that should be classed as inoperable, and then find that the tooth must still be extracted after an expenditure of much time and effort. In almost all instances this can be avoided by proper diagnostic procedures.

An absolute must in appraising any prospective root canal case is a good periapical roentgenogram, and, in almost every case, a good full mouth roentgenographic survey should be made.

Three important criteria should be carefully considered in determining whether any prospective root canal case is operable. First, the strategic importance of the tooth must be determined. Very little will be gained by doing a root canal case in a mouth in which caries is rampant unless measures are instituted to control the caries. The saving of a single pulp-involved tooth in a mouth which harbors extensive periodontal disease will be of little significance unless periodontal treatments can return that mouth to a healthy state.

Second, make sure, before any endodontic case is started, that it is anatomically operable. This involves a careful study of the roentgenogram to determine whether excessively curved canals, excessive calcification, multiple and inaccessible canals or other obstructions will prevent obtaining a hermetical seal of the pulp canal to the apex. This phase of the study should also include a careful consideration of possible periapical involvements, their extent, whether the prognosis for response to conservative treatment is good and, if not, whether periapical curettage or resection is possible. In general, periapical surgery is not possible posteriorly to the maxillary or mandibular first bicuspid because of the proximity to the apex of the root of important anatomic structures which would be injured. Quite frequently the presence of a large maxillary antrum or proximity of the mental foramen makes the resection of the first bicuspid impractical. With the advent in the past decade of simple and practical methods of bacteriologically controlling root canal procedures, there is a growing tendency to treat many of the smaller periapical areas conservatively, and a high percentage of them heal completely without the necessity of periapical curettage or resection (Figs. 1 and 2). When periapical surgery is performed there is a growing tendency to leave the root intact, or at most merely to burnish off the tip of the root with a cross-cut fissure bur if it appears to be resorbed or otherwise porous. It has been found that peri-

apical areas regenerate as rapidly or possibly even more rapidly when the root is left intact. The end result is a more stable tooth because supporting root structure is not lost (Fig. 3).

The third phase of diagnosis should consist of a general survey of the patient's health. The work in recent years of Freyberg,[1] Hench and coworkers[2,3,4] and many other investigators has largely refuted the once highly regarded theory that root canal and periapical infections are frequently an etiologic factor for rheumatoid arthritis, rheumatic fever and a host of other systemic ailments. Indeed, the recent work of Hench gives us valid reasons to believe the rheumatic group of diseases may be hormonal rather than infectious in origin. However, the endodontist should certainly be familiar with a patient's general health picture and should questionable factors appear in his history, the dentist can often do the patient a real service by referring him to qualified medical personnel for final diagnosis and treatment. Patients suffering from debilitating diseases are not good risks for extensive endodontic procedures for the same reasons that they are not good risks for any other forms of surgical procedures.

DRUG THERAPY AND BACTERIOLOGIC CONTROLS

The second major requirement for successful endodontic practice is that the root canals and periapical area of every case must be rendered free of infection before the root canals are sealed. There are several methods which may be used successfully for the destruction of bacteria which may be present in or around the tooth, but there is only one method by which the dentist can be even reasonably sure that such infection is eliminated. This method consists of the use of an absolutely aseptic technic and bacteriologic cultures of the canals and periapical areas. Grossman[5] clearly demonstrated

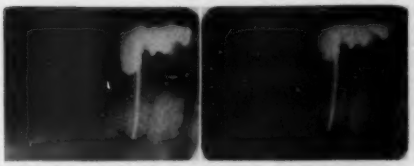


Fig. 2 • Healing of area about mandibular second bicuspid without resection or curettage. This tooth was of marked strategic importance as a partial abutment. It is still functioning as such some ten years after the root canal filling was done

the necessity for cultures when he enlisted the aid of a number of dentists who treated root canal cases until, on the basis of clinical observation, they believed the cases to be ready for filling. Cultures were then taken and of 150 cases managed in this way only 58 per cent were found sterile, the remaining 42 per cent giving positive cultures. Had this 42 per cent been filled without cultures, pathogenic organisms would have been sealed in with grave danger of an acute flare-up or a continuing chronic infection.

One still occasionally hears or reads statements to the effect that cultures may be necessary where a pulp has completely degenerated, but in the case of nonpainful vital exposures it is satisfactory to simply wash them out with an antiseptic solution and fill them at the time of pulp extirpation. In order to check the validity of such claims the author and associates

1. Freyberg, Richard H., Focal infection in relation to rheumatic diseases; a critical appraisal. J.A.D.A. 33:1101 (Sept. 1) 1946.

2. Boland, E. W.; Headley, N. E., and Hench, P. S., The effect of penicillin on rheumatoid arthritis. J.A.M.A. 126:820 (Nov. 25) 1944.

3. Hench, P. S.; Kendall, E. C.; Slocumb, C. H., and Polley, H. F., The effect of a hormone of the adrenal cortex (compound E) and of pituitary adrenocorticotropic on rheumatoid arthritis. Proc. of Staff Meet. of the Mayo Clinic 24:181 (Apr. 13) 1949.

4. Hench, Philip S.; Slocumb, Charles H.; Barnes, Arlie R.; Smith, Harry L.; Polley, Howard F., and Kendall, Edward C., The effects of the adrenal cortical hormone, 17-hydroxy-11-dehydrocorticosterone (compound E), on the acute phase of rheumatic fever. Proc. Staff Meet. of the Mayo Clinic 24:277 (May 25) 1949.

5. Grossman, Louis I., Probable percentage of correct guesses regarding sterility of root canals without bacteriological control. J. D. Res. 15:364 (Sept.) 1936.

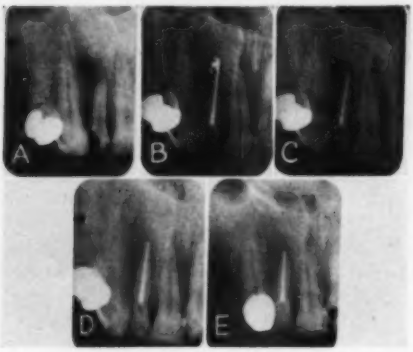


Fig. 3 • Regeneration of periapical area following curettage without resection. A: Periapical involvement of maxillary left lateral. B: Root canal overfilled. C: Immediately after curettage. D: Five months follow-up roentgenogram. E: Ten months follow-up roentgenogram. The maxillary left bicuspid was extracted because the lingual surface fractured off beneath the gum line making its use for a partial abutment impractical

checked a total of 632 cases of pulp-involved teeth which were divided into groups as follows: (1) those with no history of pain, (2) those giving a history of mild pain and (3) those giving a history of severe pain. The data obtained are presented in Table 1.

It will be noted that even among those cases in which no pain had occurred, 49.9 per cent of them were infected. Even after a 48 hour drug treatment more than 27 per cent of these cases still remained infected and nearly 10 per cent were still infected after two 48 hour treatments. It will further be seen that in those cases where there was a history of mild and severe pain, the percentage of initially infected cases increased and it became slightly more difficult to produce sterility. These data support the previously mentioned findings of Grossman[5] and other investigators who have found the obtaining of two successive negative cultures to be the only method by which a dentist can be certain that he is not sealing pathogenic organisms into a tooth and periapical area when he fills a root canal.

Some dentists have been hesitant to adopt bacteriologic controls for root canal work because they have felt that the time factor would prove prohibitive. Actually the time required for taking a culture, incubating it and determining the presence or absence of growth is negligible. The actual taking of the average culture should not require over a minute or two. Small incubators suitable for growing the cultures in the dental office are available at a reasonable cost and sterile culture media ready for use is available from many hospitals and commercial concerns. The average root canal case does not require identification of the organism present, and whether or not there is infection in the tooth can be determined by simply looking at the culture tube after it has been incubated for 48 hours. A clear tube indicates no growth while a cloudy tube indicates the presence of infection (Fig. 4).

The use of the culture technic in root canal procedures may save time rather than increase the time requirement for such work. In order to determine exactly how many treatments may be expected to be necessary to obtain two successive negative cultures in the average root canal case, a series of 759 routine cases from the University of Michigan Clinic was tab-

Table 1 • Relation of bacteriology and treatments to pain preceding pulpectomy

Cases with a history of:	No pain	Mild pain	Severe pain
Not infected	144 (50.1%)	96 (47.5%)	64 (44.7%)
Infected	143 (49.9%)	106 (52.5%)	79 (55.3%)
Treatment	**Cases becoming sterile**		
One	104 (72.7%)	69 (65.1%)	51 (65.4%)
Two	26 (18.1%)	23 (21.7%)	17 (21.5%)
Three	7 (4.9%)	10 (9.4%)	8 (10.1%)
Four	4 (2.7%)	1 (0.9%)	3 (3.7%)
Five	2 (1.4%)	3 (2.7%)	.....
Totals	143	106	79

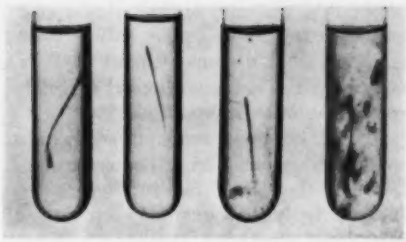


Fig. 4 • Root canal cultures after 48 hours incubation. The first, third and fourth tubes show varying degrees of growth indicating that the teeth are infected. The second tube is clear indicating the tooth to be sterile

ulated. As a control, a series of 138 cases treated in the author's private practice was tabulated. The standard drug treatment used in both of these series consisted of thorough washing of the canals with sodium hypochlorite solution U.S.P. or its equivalent, followed by a 48 hour drug treatment sealed into the tooth under a double seal of temporary stopping and cement. The drug most frequently sealed into the tooth was camphorated parachlorophenol, made by combining three parts of crystalline parachlorophenol with seven parts of gum camphor. When combined in this proportion these substances spontaneously liquefy, forming a clear, colorless, oily liquid. A few cases were treated with chloroazodin U.S.P. in a concentration of 1:100 in triacetin and for experimental reasons some of the clinic cases were treated with eugenol and formaldehyde-cresol solution. The latter solution was made up with equal parts of cresol U.S.P. and formaldehyde solution U.S.P. The data are presented in Tables 2 and 3.

It will be seen that the average number of treatments required per case to obtain two successive negative cultures was 3.06 for the clinic series and 3.41 for the private practice series, a rather close correlation for the two series. We believe that these figures represent an element of time saving because most dentists who do not culture their cases tend to treat them for a more extended period of time since they have no way of being sure when they are sterile.

The data presented above emphasize both the desirability and necessity for the routine use of cultures in endodontic work and it seems almost trite to state that in the University of Michigan Dental Clinic every root canal case which is filled must first have two successive negative bacteriologic cultures. These cultures are taken *in situ* under a strictly aseptic technic as described by Sommer and Crowley.[6] The only possible legitimate deviation from this practice is in those few instances where resection or periapical

6. Sommer, Ralph F., and Crowley, Mary C., Bacteriological verification of roentgenographic findings in pulp-involved teeth. J.A.D.A. 27:723 (May) 1940.

Table 2 • Treatments required to obtain two successive negative cultures in 759 root canal cases treated in the clinic of the University of Michigan, School of Dentistry

Number of treatments	Cases completed	Per cent
Two	298	39.3
Three	281	37.0
Four	83	10.9
Five	47	6.2
Six	33	4.3
Seven	10	1.3
Seven plus	7	0.9
Totals	759	

Average number of treatments per case: 3.06

Table 3 • Treatments required to obtain two successive negative cultures in 138 root canal cases treated in private practice

Number of treatments	Cases completed	Per cent
Two	36	26.1
Three	51	36.9
Four	28	20.3
Five	11	7.9
Six	7	5.1
Seven	4	2.9
Nine	1	0.9
Totals	138	

Average number of treatments per case: 3.41

curettage is to be done and because of limited availability of the patient or other unusual circumstances it is not feasible to carry out the regular culture regime. In this instance the root canal filling and periapical surgery are done at one sitting. The gross infection is removed through mechanical washing of the root canal with suitable antiseptics and the surgical removal of infected periapical tissue. There is a greater danger of postoperative infections when this technic is used, but this danger can be reduced by prophylactic administration of penicillin at the time of operation. It must again be emphasized that it is only the occasional, unusual case that should be handled by this method.

Any drug which is to be used routinely in root canal treatments should meet certain fundamental requirements. One of the most important requirements is that it must be noninjurious to the periapical tissues. If the tissues about the apex of a root are damaged by the caustic action of such once popular drugs as formocresol, iodized phenol or others of an escharotic nature, the prognosis for a successful root canal filling cannot help but be less favorable (Fig. 5). Any root canal drug must be an effective antiseptic and it must be capable of penetrating and acting in the presence of organic matter. It also must be stable enough to remain effective for at least a 48 hour period when sealed into the root canal and must not stain tooth structure. The author and associates have reported in previous papers[7, 8] that of the more commonly used drugs that meet these requirements, camphorated parachlorophenol has proved to be one of the best in our hands. The dentist should have several root canal drugs in his armamentarium because not all strains of organisms will respond to the same drug and if negative cultures are not obtained rapidly it is well to alternate drugs. Other commonly used root canal antiseptics which meet the above requirements with reasonable accuracy include beechwood creosote and chloroazodin U.S.P. (Azochloramid) in a concentration of 1:125 in triacetin. Care must be taken in the use of the latter preparation in anterior teeth because of its tendency to discolor.

Recently great interest has been manifested in the use of the antibiotic group for treatment of root canal and periapical infections. Presently available evidence would indicate that certain antibiotics may be very useful in the treatment of such infections. We have previously reported[9, 10] that penicillin alone was not as effective as commonly used drugs because of the frequent presence of penicillin-resistant organisms. We have obtained quite satisfactory results with a combination of penicillin and streptomycin prepared by extemporaneously mixing the contents of a prepared capsule[11] containing 10,000 units of crystalline sodium penicillin G and 50,000 units of streptomycin phosphate with sterile saline solution, forming a mix of whipped cream consistency, and Grossman[12] has reported very successful use of a combination of these two antibiotics suspended in sterile oil. The greatest objection to this combination appears to be that it is ineffective against the yeasts which are sometimes found in root canals. It should be emphasized that new antibiotics are being studied experimentally and that several, in addition to penicillin and streptomycin, are already in use in clin-

7. Ostrander, F. D., and Crowley, M. C., Effectiveness of clinical treatment of pulp-involved teeth as determined by bacteriological methods, J. Endodontia 3:6 (Jan.) 1948.

8. Ostrander, F. D., Drug therapy in endodontia: Questions and answers. J.A.D.A. 39:238 (Aug.) 1949.

9. Crowley, Mary C., and Harner, Verna, Penicillin sensitivity of streptococci isolated from root canal infections in the normal mouth. J. D. Res. 26:399 (Dec.) 1947.

10. Ostrander, Floyd D.; Crowley, Mary C., and Dowson, John, A clinical study of the treatment of root canal and periapical infections with penicillin. J. D. Res. 26:403 (Dec.) 1947.

11. Supplied for experimental purposes by the Bristol Laboratories, Inc. Syracuse, N. Y.

12. Grossman, L. I., and Stewart, G. G., Effective penicillin-streptomycin suspension for endodontic treatment. Oral Surg., Oral Med. and Oral Path., 2:374 (Mar.) 1949.

ical practice. It seems highly probable that as time permits their appraisal as root canal antiseptics, some effective and readily available antibiotic therapy will be devised for the endodontist.

HERMETIC SEAL OF ROOT CANALS

The third major requirement for successful root canal therapy is the sealing of the pulp canals. Unless a technic is used which will obtain a hermetic seal of the pulp canal at, or very near, the apex of the root canal, the dentist's efforts toward accurate diagnosis, careful drug therapy and bacteriologic control may well be wasted. A leaking or incomplete root canal filling allows body fluids to penetrate and stagnate in the tooth and in turn irritating break-down products of these fluids may diffuse back through the apex and produce tissue damage. This may pave the way for subsequent infection by way of the blood stream or crown of the tooth in case there is a leaking restoration.

Several excellent technics for filling root canals are available and some variation in technic is indicated on the basis of variations in the morphology of the

Fig. 5 • Production of area of radiolucence about the apex of mandibular second bicuspid as a result of the use of caustic root canal antiseptics. (Formaldehyde-cresol and phenol.) As shown in the final roentgenogram, the area subsequently recalcified, but had a less excellent root canal filling been placed, a failure would probably have resulted

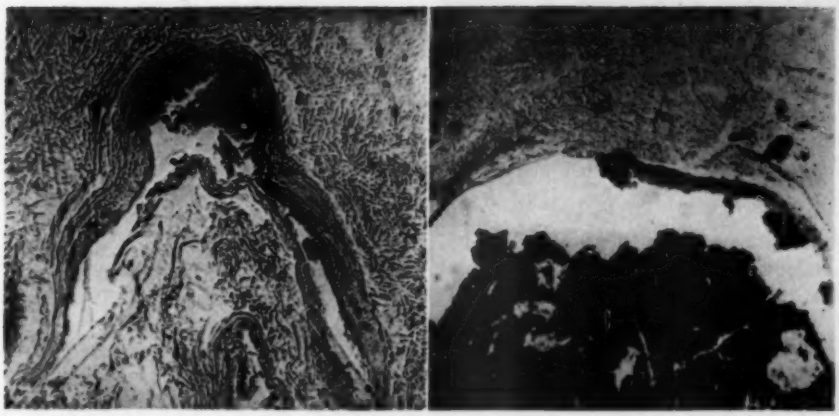


Fig. 6 • Left: Low power of area in muscle of rabbit in which root canal sealer was implanted. Note absence of any foreign body reaction. (From work of Rickert and Dickson.) Right: High power of area shown in Fig. 6 left. The only evidence of reaction that could possibly be attributed to the sealer was the presence of a few giant cells

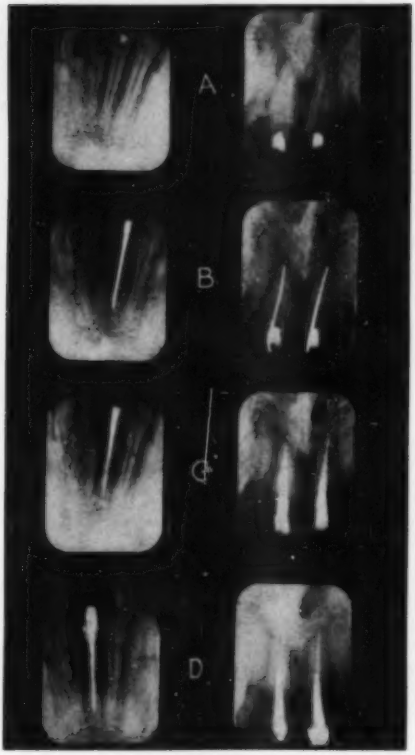


Fig. 7 • Examples of gutta-percha root canal fillings with post restoration. A: Football injury causing fracture of both maxillary centrals and right mandibular central with pulp exposures. B: Trial point roentgenograms. C: Completed root canal fillings. D: Goldcore porcelain jackets in place on all three teeth

canals. Regardless of what technic is used, a smoothly filed canal and a clean canal are essential and any material used for filling root canals should meet at least three major requirements as follows: (1) It must be easily workable; that is, it must be easily introduced into the canals, producing a hermetic seal. (2) It must be well tolerated by tissues since there is bound to be some contact with living tissue at the apex of the root and even the most expert operator occasionally overfills a canal. (3) It must not be absorbable by body tissues since this would result in delayed leakage.

The two technics which have been found to be most effective at the University of Michigan School of Dentistry are the lateral condensation of gutta-percha points and the silver point technic. In both cases the points are seated into a root canal sealer mixed to the consistency of inlay setting cement and of the following formula:

Powder	
Zinc oxide C.P.	41.2
Precipitated silver C.P.	30.0
White rosin U.S.P.	16.0
Thymol iodide N.F.	12.8
Liquid	
Clove oil	78.0
Canada balsam	22.0

This cement has been demonstrated by Rickert and Dixon[13] to be very well tolerated by the tissues and is of a consistency which makes for easy workability (Fig. 6, left and right).

The use of the gutta-percha filling is indicated largely in the maxillary anterior teeth where the canals are large and irregular and where there is frequent indication for a restoration requiring a post in the root canal. After establishing accurate length by means of a trial roentgenogram, the walls of the canal are covered with the sealer and gutta-percha points are condensed into the canal by a Kerr no. 3 spreader until it is completely filled (Fig. 7).

The silver point technic is indicated in most posterior teeth and mandibular anterior teeth unless a post is to be required for the restoration, in which case gutta-percha should be used. The silver point technic is a precision technic which depends upon the accurate fitting of a silver

13. Rickert, U. Garfield, and Dixon, C. Merle Jr., The controlling of root surgery. Int. Den. Cong. (8th) Jr. Suppl. 1931, Sec. III-A, p. 15.

Fig. 8 • Examples of silver point root canal fillings on molar teeth

point into the root canal which has been filed by a root canal file of similar size and taper to that of the silver point. After final determination of length by roentgenogram, the walls of the canal are covered with the sealer and the silver point is carefully seated in place in such a manner that the canal is hermetically sealed at the apex. The use of this technic has greatly simplified the filling of posterior root canals which are frequently both small and curved (Fig. 8).

CONCLUSION

Three major requirements for successful endodontic practice have been presented as follows: (1) accurate diagnosis, (2) elimination of all infection within the root canal and periapical area by means of therapeutic measures and bacteriologic controls and (3) hermetic sealing of the pulp canals.

It seems probable that most of the root canal failures which have led some dentists and physicians to condemn the pulpless tooth as a menace to health are due to failure to observe one or more of these requirements. A growing number of dentists are carrying on the practice of endodontia by means of technics which observe these fundamentals, and with routinely successful results. The practice of scientifically sound endodontia is within the capacity of every good dentist and is possible in any well-equipped dental office.

Premature Publicity • It is important and quite proper that a physician report to his colleagues by appropriate means, either through professional journals or at medical meetings, that some new treatment or means of diagnosis has appeared to be successful in his hands and merits further investigation—this makes for progress. In time, other physicians may prove that the new treatment has merit or they may discover that it may be harmful or even endanger life. One wonders, in such circumstances, what is gained by informing the public of the original observations that later cannot be confirmed. Such is not legitimate, trustworthy news. Disillusionment follows in its wake, with the result that the premature publicity provides nothing but disappointment to, and a loss of confidence by, the anxious reader. *Russell S. Boles, "The Press and the Patient," The Journal of the American Medical Association 144:361 September 30, 1950.*

A technic for direct wax patterns of three-quarter crowns

August Bartelle, D.D.S., Pearl Harbor, T.H.

A cast gold three-quarter crown is only as accurate as the wax pattern from which it was reproduced, discounting the minute variables in casting procedures. It is essential, therefore, to produce a wax pattern that accurately fits the prepared tooth. This technic consists in the adaptation of the inlay casting wax to the three-quarter crown preparation with a contoured band in a matrix retainer, then removing the band and carving the wax with instruments, sandpaper disks and burs to the proper anatomy and occlusion. These procedures can be used on conventional three-quarter crown preparations and modifications, such as gingival shoulder or pinledge preparations. Best results are obtained on preparations of anterior teeth and bicuspids.

The armamentarium (Fig. 1) consists essentially of the following: Wagner matrix retainer, steel matrix band material, crown and collar scissors, screw mandrel with ⅞ inch coarse sandpaper disks, scalpel, Roach wax carver, Hollenback wax carver, long pointed explorer and round burs no. 2 to no. 9.

It is best to make the wax pattern immediately after completing the three-quarter crown preparation. Reducing the gingival enamel will leave a temporary crevice between the prepared crown and the gingivae. In taking the wax pattern the wax will flow readily into this crevice, if too much delay does not occur. Within twenty-four hours there will be a gingival constriction and obliteration of the crevice, unless some mechanical means is provided to maintain it.

PREPARATION OF THE MATRIX BAND

Use steel matrix band material ⅜ inch wide. Cut off a strip about 2¼ inches long (Fig. 2A). Double this strip over and make a curved cut from the middle of the free ends to the margin of the loop. Open up the band and straighten out any kinks, round off the sharp corners, and file down the sharp edges (Fig. 2B). Loop the free ends of the band and attach it to the Wagner matrix retainer with pliers (Fig. 2C). Carry the matrix retainer with the band attached to the prepared crown (Fig. 3). Check any impingement on the gingivae and contour the band with crown and collar scissors as necessary. Return the attached band to the crown and tighten the matrix retainer so that about 0.5 mm. of free space

Presented at the forty-seventh annual meeting of the Hawaii Territorial Dental Society, Honolulu, T. H., June 17, 1949.

The opinions or assertions herein are those of the author and are not to be construed as official or reflecting the views of the Navy Department or the Naval service at large.

Commander, DC, U.S. Navy.

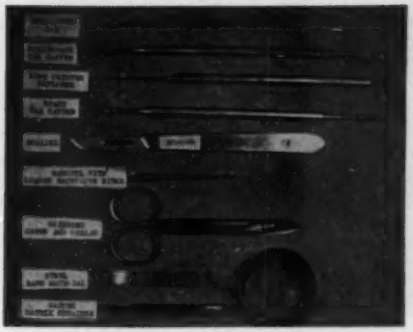


Fig. 1 • Armamentarium for direct wax patterns for a three-quarter crown

is observed between the crown and the band at the gingival margin.

PLACING THE WAX IN POSITION ON THE PREPARED CROWN

Remove the matrix retainer with the attached band from the tooth; pass the band once through the flame to warm and then lubricate the inside immediately with cocoa butter or Vaseline. This procedure will prevent the inlay wax from adhering to the band. Fill the band with softened inlay wax. Wax softened in a wax annealer gives the best results. Do not heat the wax in the band. Use any hard wax which meets American Dental Association specifications.

Carry the band filled with wax to position on the prepared crown, force the wax into place, tighten the matrix retainer (Fig. 4), and maintain pressure until the wax has congealed. Wash with tepid

Fig. 3 • Fitting matrix band to prepared crown

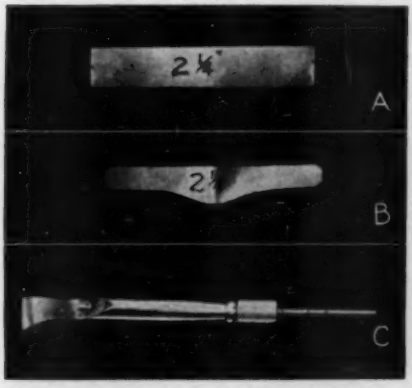


Fig. 2 • A: Steel matrix band material ⅜ inch wide. Cut strip about 2¼ inches long. B: Sharp edges are filed down and sharp corners are rounded off. C: Free ends of band are looped and attached to the Wagner matrix retainer with pliers

water. Trim the excess wax around the band that has squeezed out at the gingival margin and at the top of the band (Fig. 5 left and right) and remove the matrix retainer. Then remove the matrix band carefully (Fig. 6). Examine the bulk of the wax. Insure that the wax has been forced under the free margin of the gingivae. If it has not been forced under the margin the band is either too tight around the tooth, or the wax too hard when forced on the crown. If the wax is not under the free margin of the gingivae, it is best to start over again by cleaning the band by passing it through a flame, lubricating it and using new wax.

Fig. 4 • Inlay wax carried to place on the prepared crown

CARVING THE WAX TO PROPER ANATOMY AND OCCLUSION

With two 7/8 inch coarse sandpaper disks mounted back to back on a screw mandrel, reduce the labial bulk of wax until the proximal and labial margins of the prepared crown are faintly visible through the wax (Fig. 7 left and right). Do not remove any more wax from the labial surface at this time. This wax will serve as an anchorage which will prevent displacement and distortion while the remaining bulk of wax is being carved to proper anatomy. With the coarse sandpaper disks reduce the labial or occlusal wax to the proper dimension. Reduce the lingual bulk of wax with a scalpel cutting toward the gingival and reproducing the gross anatomy of the lingual surface of the tooth (Fig. 8). Heat a blunt long-pointed explorer, and insert it through the wax into the pin retention hole on the lingual surface of the crown. (This procedure is disregarded if no provision has been made for a lingual pin retention hole in the three-quarter crown preparation.) The explorer will force the trapped air to the surface and carry wax to the floor of the pin hole. Include this procedure in modified pinledge preparations. Use light finger pressure over this region while the wax is congealing. Carefully carve the detailed anatomy of the lingual surface with round burs no. 2 to no. 9, whichever will reproduce the desired anatomy (Fig. 9). Check to see if the wax pattern is in occlusion. Make a paste of tin oxide or zinc oxide and water. Paint a thin layer of this paste on the labial or occlusal surfaces of the occluding teeth. Have the patient carefully close in centric occlusion until the teeth are in contact with the wax. A white mark will result where the wax pattern is high. Repeat this procedure for first right lateral and

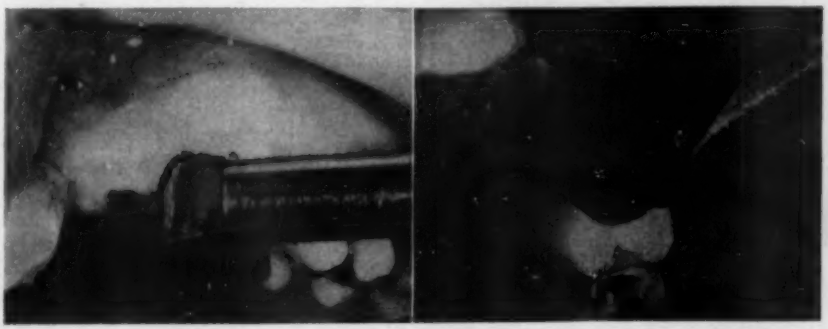


Fig. 5 • Left: Labial view after excess wax is removed. Right: Lingual view after excess wax is removed

Fig. 6 • Matrix band removed

then left lateral occlusion. Reduce this wax with a round bur or Roach wax carver. Repeat this procedure until the wax pattern is in proper occlusion. Smooth the lingual surface of the wax pattern with a Roach wax carver or a discoid. Examine the proximogingival region and remove all the wax that has been forced beyond the crown into the undercut area. Contour the proximal surface to the proper anatomy with a Hollenback wax carver, making sure there will be no impingement on the proximating tooth or teeth during removal of the wax pattern. Holding the wax pattern in position from the lingual aspect with the left index finger, carefully reduce the wax on the labial surface with a Hollenback wax carver to the proximal and incisal margins. Examine the finished wax pattern in position. Satisfy yourself that there are no thin areas, that the wax is below the free margin of the gingivae, and that the incisal and proximal wax has been reduced to the form which is desired in the finished cast three-quarter crown.

For direct wax patterns for bicuspids, the matrix band is contoured and checked to be sure that it does not interfere with functional occlusion. After seating the band filled with softened inlay wax and tightening up on the matrix retainer, the patient is asked to close in centric, right and left lateral occlusions. Finish the wax pattern with the same instrumentation as for a three-quarter crown wax pattern of an anterior tooth.

The wax on the lingual surface below the gingivae should not be touched. If the band was properly fitted, a sufficient thickness of wax will be reproduced at the linguogingival margin. Any carving at the linguogingival margin will distort the pattern and may produce hemor-

Fig. 7 • Left: Removing labial wax with coarse sandpaper disk. Right: Bulk of labial wax removed, so that labial and proximal margins are faintly visible

Fig. 8 • Removing lingual bulk of wax with a scalpel

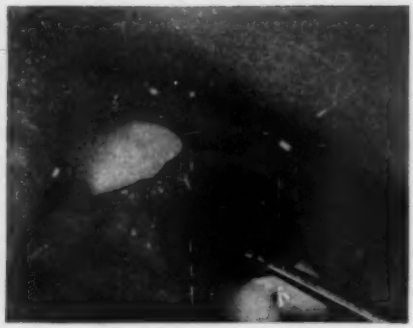


Fig. 9 • Carving lingual surface with round burs

Fig. 10 • Left: Labial view of finished ¾ crown wax pattern. Right: Lingual view of finished ¾ crown wax pattern

rhage. The wax pattern is now ready to be sprued (Fig. 10 left and right). If, after spruing and removing the wax pattern, it is discovered that the linguogingival region is too thick, but that the wax pattern is otherwise satisfactory, invest, burn out, cast and reduce the gold to proper anatomy.

CONCLUSION

A technic, which consistently produces well-fitting three-quarter crowns for anterior and bicuspid teeth, has been presented. This technic is considered to be particularly advantageous for the following reasons: (1) The wax pattern is intimately and accurately adapted to the prepared crown. (2) Minimal hand carving is required for the production of normal anatomical form. (3) Distortion or displacement of the wax pattern during carving is obviated. (4) Reproduction of accurate margins in the casting is ensured.

The dental health education and follow-up program in the elementary and junior high schools of New York City
June 1, 1948 to May 31, 1949

Harry Strusser, D.D.S., M.S.P.H., and*
Henry C. Sandler,† D.M.D., M.P.H., New York

Dental health education is one of the important functions of the Bureau of Dentistry of the New York City Department of Health. The objectives of the program are to increase public awareness of the importance of dental health, to inform people of how dental health can be maintained and to influence parents to seek early care for their children. Many channels and media are utilized for this purpose, such as the press, radio, television, pamphlets, lectures to lay and professional audiences, and teaching of medical and dental students, hygienists, nurses and teachers.

The greatest emphasis is placed upon the school dental health education program which is a cooperative enterprise between the Departments of Health and Education. In this program the teachers do the teaching while dental hygienists are available for authoritative information and guidance in matters relating to dental health. The duties and responsibilities of each are clearly outlined at the beginning of each school year. The teacher is responsible for teaching, for referral of children to dentists, some follow-up, and for keeping a dental record of each child. On a specified day the teacher explains the need for dental care to the children and distributes dental referral forms to all children. She directs them to visit their family dentists and to return the appropriately signed dental certificate. This form serves the dual purpose of dentist referral and when signed by the dentist and returned to the teacher, is also a certificate of dental treatment.

The dental hygienists employed by the Department of Health are responsible, in addition to clinical duties, for consultation, specialized teaching, including toothbrush drill, inspection, follow-up, parent interview, home visits, the remainder of the record keeping and annual summary. Each dental hygienist is assigned to a specific group of schools so that she can develop a community dental health program in cooperation with the school health counselors.

The hygienist visits each of her assigned schools some time after the dental note has been distributed to the pupils and continues to visit these schools for

*Director, Bureau of Dentistry, Department of Health, City of New York.
†Assistant director, Bureau of Dentistry, Department of Health, City of New York.

the rest of the school year. She inspects the mouths of the children who had not been to a dentist, classifies them according to the urgency of need for dental treatment, and requests their parents to come to the school for an interview. If the parent does not keep the appointment for an interview, the hygienist consults with the school nurse. From the school health record it is determined whether the child suffers from other physical defects. The school nurse makes a home visit if there are other physical defects, and the dental problem is discussed as a part of the general health problems of the child. If there is no reason for a nurse to visit the home the hygienist makes a home call.

No community dental health education program can be effective without the cooperation of the dental profession. In New York City the Oral Hygiene Committee, representing the local dental societies, has cooperated with the Department of Health in the program in many ways. The work of organized dentistry has been especially effective in stimulating the interest of the profession in the school health program.

CLINIC TREATMENT

Experience has demonstrated that a school health education program tends to fail unless some provision is made for the care of those children whose parents are unable to afford the cost of dental care. The Department of Health operates 139 dental clinics and employs more than 300 dentists, dental hygienists, dental assistants and supervisors to care for such children. One hundred and twenty of the clinics are located in public schools (one chair units) and 19 are located in health centers (four chair units). In 1949 these clinics treated 36,163 children.

The school dental clinics concentrate their service on the children from kindergarten to the 4th grade inclusive, while the health center dental clinics treat elementary school children above the 4th grade and preschool children. Priority of registration is based on the seriousness of dental treatment needs and all necessary treatment is completed once a child is registered. Since dental facilities are severely limited, parents are urged to take their children to a private dentist if at all possible and only children from families with substandard incomes are accepted for clinic treatment. When a series of dental treatments has been completed in a Department of Health clinic, the parent is urged to seek subsequent care from a private dentist. The low cost of maintenance care and the health benefits of continuous care are carefully explained. Despite all efforts to direct patients to private dentists or to part-pay clinics, the number of childen who are eligible by economic standards is far greater than the present facilities or personnel can provide.

REPORTING AND SCHOOL COOPERATION

At the end of each school year all classroom records are collected and summarized by the Department of Health. Of the 975 public and parochial elementary and junior high schools in the city, 97.5 per cent returned reports, representing 23,428 classes and 776,323 children. This constitutes over 90 per cent of all elementary and junior high school children in the public and parochial schools and these may be considered representative of the city. The high percentage of reporting is some measure of the cooperation and interest in the dental health program (Table 1).

RESPONSE TO REFERRAL, A MEASURE OF DENTAL CARE

A study conducted in 1942 indicated that there were large numbers of parents who can afford to pay for dental care for their children but were not convinced of its

Table 1 • Summary of dental health education program among elementary and junior high school children, June 1949-May 1950. Schools and classes reported under the program by health center districts, New York City

Geographical unit (Health districts)	Schools reported*		Classes reported		Number of pupils registered in reported classes
	Number of schools reported	Per cent of all schools	Number of classes reported	Per cent of classes in reported schools	
New York City	951	97.5	23,428	94.7	776,323
Manhattan					
Central Harlem	24	100.0	835	92.0	24,884
East Harlem	25	92.6	822	94.8	25,811
Kips Bay-Yorkville	24	100.0	400	100.0	12,717
Lower East Side	45	100.0	887	99.4	26,927
Lower West Side	32	100.0	498	98.4	16,232
Riverside	20	100.0	516	97.5	17,916
Washington Heights	23	95.8	666	92.8	22,092
Bronx					
Fordham-Riverdale	26	96.3	691	95.7	23,906
Morrisania	24	96.0	801	94.0	25,559
Mott Haven	28	96.6	816	89.7	27,611
Pelham Bay	21	95.5	320	71.9	10,803
Tremont	30	90.9	1,002	89.3	33,129
Westchester	32	94.1	595	91.1	22,132
Brooklyn					
Bay Ridge	34	97.1	1,069	97.3	35,764
Bedford	32	97.0	954	96.0	31,538
Brownsville	33	100.0	1,104	94.4	33,754
Bushwick	34	97.1	728	90.1	24,644
Flatbush	40	97.6	1,410	98.1	49,482
Fort Greene	29	100.0	781	96.4	25,279
Gravesend	37	92.5	1,020	88.9	33,350
Red Hook-Gowanus	22	95.7	460	93.3	15,444
Sunset Park	30	96.8	779	94.8	23,905
Wmsbrg.-Greenpoint	36	97.3	814	96.8	26,600
Queens					
Astoria	30	100.0	871	99.3	29,629
Corona	25	100.0	564	92.2	19,541
Flushing	33	100.0	742	100.0	26,417
Jamaica East	45	97.8	1,028	96.0	34,686
Jamaica West	48	100.0	854	97.4	29,827
Maspeth-Forest Hills	34	97.1	742	97.5	25,227
Richmond	55	100.0	659	99.4	21,517

*Includes public and parochial schools.

importance.[1] It has also been demonstrated that the dental certificate, signed by the dentist, and especially a certificate of completion of treatment, is a fairly good index of the dental care received by children.[2] With these facts in mind and in view of the almost universal nature of dental disease, the Bureau of Dentistry intensified its efforts to refer every child to a dentist at least once each year.

Table 2 shows how the number of children referred to their dentists and the number who completed care has increased from year to year. In 1947-1948 there were 300,009 children who com-

1. Strusser, H., and Sandler, H. C., A program of dental health education supplementing the activity of the school dental clinics. D. Outlook 30:218 (May) 1943.

2. Strusser, H., and Sandler, H. C., Patient response to free dental care. New York J. Den. 18:88 (Mar.) 1948.

Table 2 • The number of children referred to their dentist and the number who had dental treatment completed by a private dentist or other agency in New York City from 1942 to 1949-50

School year	No. of children referred to dentist	No. of children who had all dental treatment completed*
1942	32,346	25,199
1943	104,409	42,830
1944	178,989	54,424
1945–1946	293,376	123,623
1946–1947	529,328	211,155
1947–1948	658,290	300,009
1948–1949	708,582	346,037
1949–1950	776,323	405,859

*In addition to these children who completed treatment there were many who were still under treatment. In 1949-50, there were 102,493 children under treatment making a total of 508,352 who received dental care.

pleted dental treatment. In 1948-1949 this was increased to 346,037 and in 1949-1950 to 405,859 children. The number of children still under treatment increased proportionately. Altogether 65.5 per cent of the school children received dental care in the school year 1949-1950 compared with 61 per cent in the previous year and 58 per cent in 1947-1948. The percentage of children who completed care also increased each year, from 45 per cent to 48 per cent and 52 per cent in 1949-1950.

Each year close to 90 per cent of the dental services for children were supplied by private practitioners. The Department of Health treated about 6 per cent of the children, while voluntary agencies, part-pay clinics, dental schools and hospitals accounted for 4 per cent of the total.

When smaller geographic areas, or health districts, with populations of 250,000 are considered the percentage of children receiving dental care varies considerably (Table 3). Generally there is a direct relationship between the economic status of the area and the proportion of children receiving dental care. Central Harlem, Mott Haven and Red Hook districts, among the lowest in economic status, had the smallest percentage of children who received dental care even though the Department of Health provides the greatest proportion of free clinic services in these areas. In contrast were the Flatbush and Gravesend districts, both of above median economic status, where 88 and 83 per cent of the children respectively received dental care in 1949-1950.

It should be noted that the Flatbush and Gravesend areas have had a longer continuing educational program and that though there are other areas in the city of equal or better income status they have not achieved the same degree of dental care for their children.

SUMMARY

1. The New York City Department of Health program of dental health education in the schools is directed toward increasing the quantity and quality of dental care for children. To this end, all children are referred to their family dentists each year. Free treatment is provided for children whose parents cannot afford private care.

2. Practically all children in the elementary schools were referred to their family dentists in the school year 1949-1950.

3. The school cooperation and interest is reflected by the fact that 97.5 per cent of the schools and 94.7 per cent of all classes kept and filled out reports, and that 90 per cent of all children were included in these reports.

4. In the school year 1949-1950 52 per cent of the children had completed all dental needs and 13.5 per cent were still under treatment, making a total of 65.5 per cent of elementary and junior high school children who received dental care. Of this total, 90 per cent were treated by private dentists, 6 per cent in Department of Health clinics, and 4 per cent by other agencies and part-pay clinics.

5. There was considerable variation

Table 3 • Summary of dental health education program among elementary and junior high school children, June 1949-May 1950. Number of children known to have received dental care by health center districts, New York City

Geographical unit (Health districts)	All children who received dental care	Children for whom treatment is not yet completed		Children who received complete treatment	
		Health dept.[1]	Other[2]	Health dept.[1]	Other[2]
New York City	508,352[3]	11,433	91,060	18,263	387,596
Manhattan					
Central Harlem	7,209	566	1,390	1,195	4,058
East Harlem	13,844	95	4,265	106	9,378
Kips Bay-Yorkville	10,604	118	2,123	299	8,064
Lower East Side	18,874	372	3,579	776	14,147
Lower West Side	9,826	856	2,522	968	5,480
Riverside	10,591	327	2,175	388	7,701
Washington Heights	13,979	414	2,536	617	10,412
Bronx					
Fordham-Riverdale	17,128	159	3,008	238	13,723
Morrisania	12,536	392	1,886	687	9,571
Mott Haven	11,763	482	3,295	1,030	6,956
Pelham Bay	8,111	81	1,310	275	6,445
Tremont	25,344	288	3,496	776	20,784
Westchester	16,430	447	2,260	794	12,929
Brooklyn					
Bay Ridge	27,377	284	4,885	432	21,776
Bedford	17,964	585	3,445	712	13,222
Brownsville	25,002	410	3,179	774	20,639
Bushwick	12,123	400	3,169	563	7,991
Flatbush	43,446	315	5,251	411	37,469
Fort Greene	13,397	513	3,426	638	8,820
Gravesend	27,608	406	3,636	528	23,038
Red Hook-Gowanus	6,028	367	1,619	616	3,426
Sunset Park	14,581	190	2,826	296	11,269
Wmsbrg.-Greenpoint	13,071	690	2,889	1,083	8,409
Queens					
Astoria	22,333	280	3,899	880	17,274
Corona	14,271	435	2,692	492	10,652
Flushing	21,605	245	2,987	408	17,965
Jamaica East	21,818	463	3,784	583	16,988
Jamaica West	21,022	425	3,934	499	16,164
Maspeth-Forest Hills	19,028	191	2,838	375	15,624
Richmond	11,439	637	2,756	824	7,222

1. These data do not include preschool and high school children and those not reported.
2. Children treated by private dentists and agencies such as Guggenheim Dental Clinic, Children's Aid Society, Community Service Society and Boys' Clubs are included in this column.
3. 89.5 per cent of this number were treated by private dentists.

in the percentage of children receiving dental care between health districts; from a low of 29 per cent in Central Harlem to a high of 88 per cent in Flatbush. The best results were obtained in areas where the dental health education program has been of long standing and where the economic status is above median.

125 Worth Street

The mental foramen injection

William A. Cook, D.D.S., Detroit

The advisability of making a mental foramen injection to anesthetize the incisive and mental nerves frequently is questioned. Pain caused by the insertion of the needle, paresthesia resulting from injury to the nerve fibers and difficulty in locating the foramen are reasons advanced against the use of this type of injection. The mental foramen can be located and the injection made without undue pain. The resultant anesthesia is immediate and profound for the bicuspid, cuspid and incisor teeth. It is a favorite injection of dentists who have used it successfully and its advantages are equal to those of any other injection employed in oral surgery. If the injection is given skilfully there is little likelihood that paresthesia will result. Should paresthesia occur it will be relatively slight.

Some embryologists contend that nerves do not cross the median line. However, it is common knowledge that pain may persist at both sides of the median line after a unilateral anesthetic has been given and that the pain ceases when the nerve supply from the opposite side of the mandible has been anesthetized. Therefore, if a painless operative procedure is to be performed at the median line it is advisable to anesthetize the mental, incisive and lingual nerves on both sides of the arch.

DETERRENTS

The principal deterrent to this type of injection is the inability of many operators to locate the mental foramen. The location of the mental foramen has been described as "slightly anterior to the apex of the lower second bicuspid tooth." This is a practical description of the location of the foramen in a normally developed mandible that has a normal complement of teeth. For the sake of convenience this location will be referred to as the norm. Because of the wide variations in the physical make-up of mandibles, however, there are wide variations from the norm (Fig. 1). In my collection of skulls the position of the mental foramen varies both horizontally and vertically and the size of the foramen varies from 6 mm. down to 2 mm. (Fig. 2).

The purpose of this article is to demonstrate these variations and to present a technic which will enable operators to overcome the obstacles that have prevented them from using the mental foramen injection.

VERTICAL POSITION

The absence of constant and definite landmarks precludes a set technic for this injection. However, all mandibles have certain anatomic characteristics which make it possible in most cases to find this foramen with reasonable ease. These characteristics were discovered in 1918-1919 during a comparative measurement study of 200 skulls and mandibles. Two series of these measurements pertained to the mental foramen. One consisted of recording the measurements from the mental foramen to the superior border of the mandible and the other consisted of

recording the distance from the mental foramen to the inferior border of the mandible. The record revealed wide variations in the distance from the foramen to the superior border. In edentulous specimens, in which the alveolar process was resorbed completely, the mental foramen opened on the superior surface of the mandible (Fig. 1A). In another specimen the foramen was 26 mm. from the alveolar crest (Fig. 1C).

These wide variations demonstrate that the superior border of the mandible cannot be used as a landmark in locating the mental foramen. The records show, however, that the distance from the mental foramen to the lower border of the mandible in all cases is fairly constant. Measurements of over 200 cases revealed that the mental foramen is located between 10 mm. and 17 mm. from the inferior border of the mandible. In this

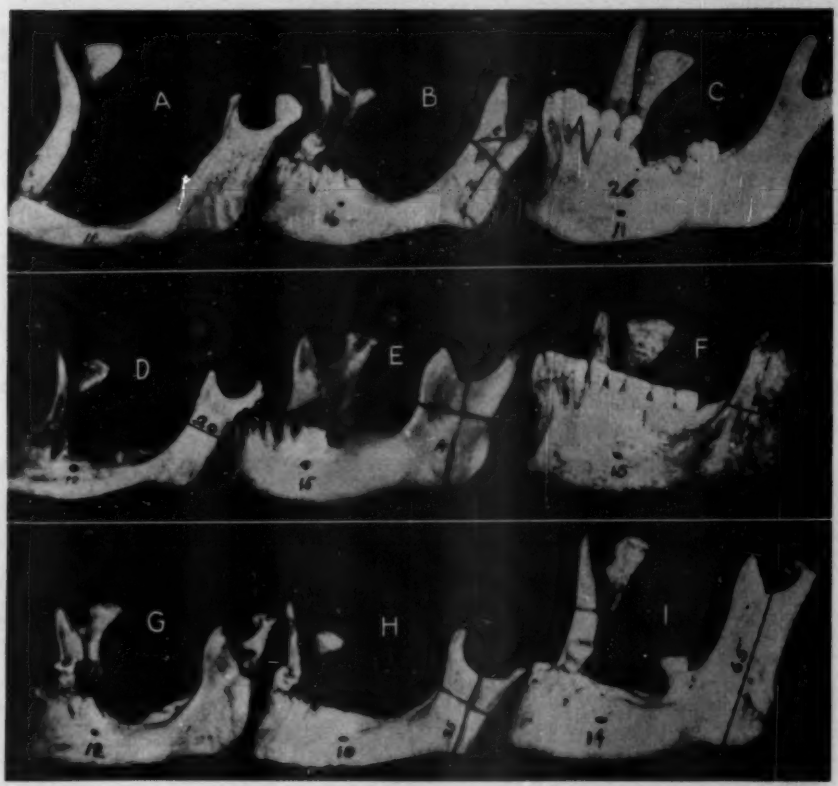


Fig. 1 • These specimens show the wide anatomic variations in mandibles and demonstrate the relative positions of the mental foramens to the upper and lower mandibular borders. A: The alveolar process is completely resorbed and the mental foramen opens on the superior surface of the mandible. C: The distance from the mental foramen to the superior border of the mandible is 26 mm. In these specimens the distance between the mental foramens and the interior border of the mandibles varies from 10 mm. to 16 mm.

series of 200 measurements 91 per cent of the mental foramens were between 13 mm. and 15 mm. from the inferior border of the mandible. Only one was 17 mm. and only one was 10 mm. from that border. This small variation in distance (2 mm. in 91 per cent of 200 cases) indicates that the inferior border of the mandible may be used as a fixed landmark in determining the vertical position of the mental foramen.

HORIZONTAL POSITION

It should be kept in mind that the horizontal portion of the mandible is composed of two units: the alveolar process which can be entirely resorbed (Fig. 3A), and the body of the mandible on which the alveolar process rests. It should also be kept in mind that the teeth of some individuals are set mesially or distally to what may be called a normal position in the alveolar process. Finally it should be remembered that the mental foramen is located at the junction of the alveolar process and the body of the mandible, which explains why the mental foramen appears on the upper surface of the body of the mandible when the alveolar process is lost (Fig. 3A).

It appears that the mental foramen maintains a constant horizontal relation to the body of the mandible, irrespective of the position of the teeth. Consequently if the teeth of the patient are positioned mesially to normal they will be anterior to normal in their relation to the mental foramen. In such instances the foramen will not be "slightly anterior to the apex of the second bicuspid" but possibly posterior to the second bicuspid (Fig. 3B). Likewise, when the teeth are positioned distal to normal the mental foramen will be located mesial to its normal relation to the second bicuspid and possibly mesial to the first bicuspid.

After the extraction of a tooth or teeth, the adjacent teeth usually shift their positions. For instance, if a first molar or first bicuspid, or both, are extracted the second bicuspid probably will change its position, which will result in a change in its relation to the mental foramen. If teeth adjacent to the mental foramen are malposed, the relative position of the foramen to those teeth will be

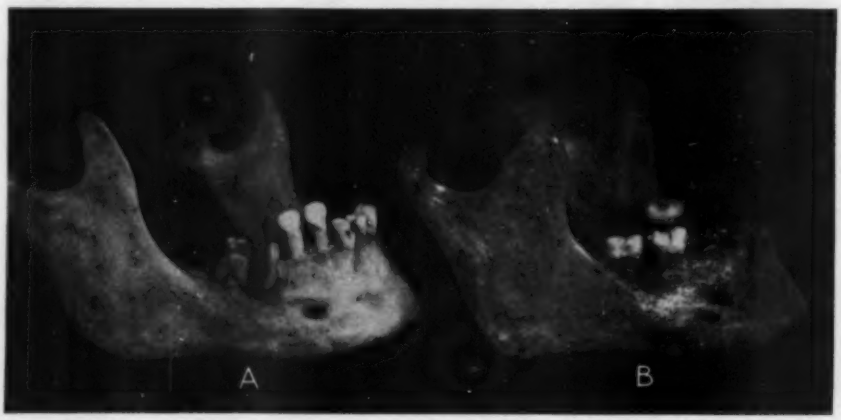


Fig. 2 • A: The mental foramen is 6 mm. in horizontal length. B: Two mental foramens are shown. The larger is 2 mm. in length

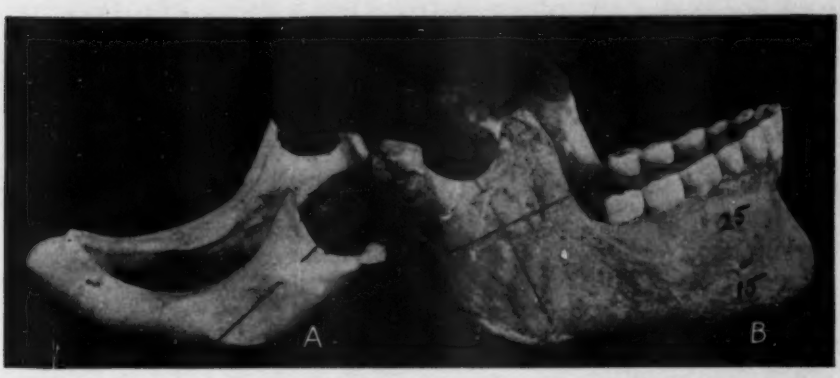


Fig. 3 • A: The mental foramen opens almost on the superior surface of the mandible. B: The mental foramen is 25 mm. from the alveolar crest. The teeth are in a forward position in the alveolar process. The mental foramen is directly beneath the first molar

affected accordingly. Also in those cases in which the alveolar process is of greater depth than the length of the bicuspid root (Fig. 1C) the apex of the bicuspid root will be above the mental foramen. These examples demonstrate that the operator must know the anatomic structures sufficiently well to recognize variations from the norm if he is to perfect a mental foramen injection technic. Most dentists know their field sufficiently well to carry out this procedure.

INCISIVE AND MENTAL NERVES

The mental foramen injection anesthetizes the incisive and mental nerves (Fig. 4). The nerves are the terminal branches of the inferior alveolar nerve which is a branch of the trigeminal nerve (Fig. 5). The terminal nerves branch from the inferior alveolar nerve within the inferior alveolar canal in the molar-bicuspid region. The incisive nerve (Figs. 4 and 5) continues anteriorly within the body of the mandible to the median line[1] and in its course it sends fibers to the adjacent teeth and to the interior of the mandible (Figs. 4 and 5). The mental nerve (Figs. 4, 5 and 6) turns laterally and upward to enter the mental canal which it traverses and leaves the mandible through the mental foramen. Within the canal the nerve follows an arc shaped distal course. Because of this distal inclination the mental foramen usually opens at an upward-

1. This statement must be qualified for the reason that sensory fibers from the cervical plexus also enervate this field. This innervation is commonly demonstrated when pain persists in the mandibular region after the inferior dental, lingual and buccinator nerves have been anesthetized.

Fig. 4 • The course of the inferior dental nerve within the mandible, and its terminal branches. A: Incisive nerve. B: Mental nerve

outward-posterior angle. Therefore, the best approach to the foramen is from a posterior-superior direction (Fig. 7). Outside of the mental foramen the nerve divides into two, three or more branches (Fig. 6) which supply the mandibular soft tissue from the first molar region to the median line, including the lower lip and chin.[1] It is obvious that these nerves must be anesthetized before surgical procedures can be performed in all regions between the first molar and the median line and in the region of the lip and chin.

Because of the inconstancy of landmarks the mental foramen injection cannot be carried out efficiently by haphazard methods which are usually successful in other injections. The mental foramen injection, however, can be made successfully if the operator will consider and apply the following principles:

1. The mental foramen is located at the junction of the alveolar process and the body of the mandible.
2. There is no constancy in the depth of the alveolar process; therefore, there is no constancy in the distance between the mental foramen and the superior border of the mandible.
3. In approximately 91 per cent of 200 mandibles examined the mental foramen was from 13 to 15 mm. from the inferior border of the mandible.
4. The mental foramen in the average normally developed mandible is slightly anterior to the apex of the lower second bicuspid. This description should serve as a starting point in locating the mental foramen.
5. Mesial or distal positions of the teeth in the alveolar process influence the relation of the mental foramen to the adjacent teeth.

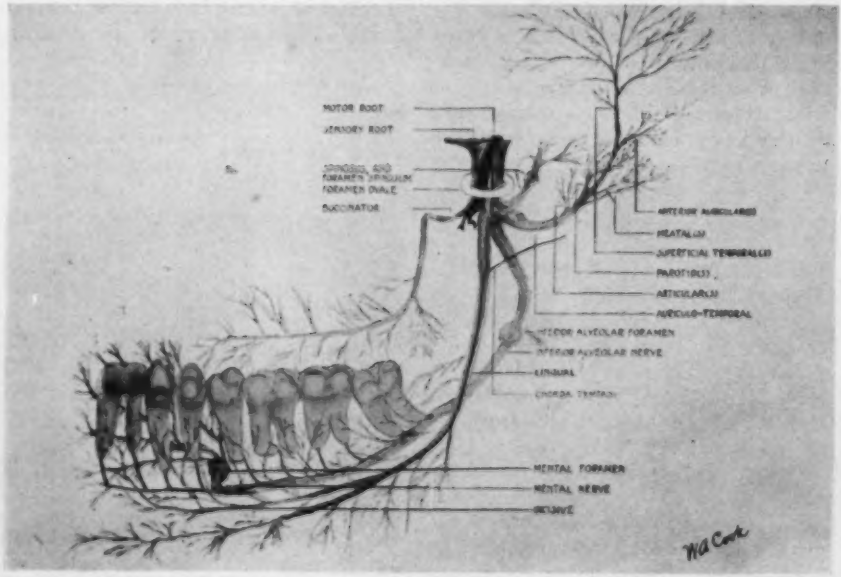


Fig. 5 • Author's conception of the sensory portion of the trigeminal nerve. The mental and incisive nerves branch from the inferior dental (inferior alveolar) nerve

6. Malocclusion and loss of teeth must be considered when determining the mesial and distal relation of the mental foramen to the second bicuspid.

7. The orifice of the mental foramen usually opens upward, outward and slightly posteriorly.

PROCEDURE

With these points in mind the operator can proceed with confidence to make a mental foramen injection. The following suggestions should be followed carefully: Determine any variations from normal present in the mouth. Apply the principles that have been enumerated to determine the probable location of the mental foramen. Select a point over the probable location of the foramen and prepare the tissues for insertion of the needle. Using a syringe fitted with a 26 or 27 gage needle delicately infiltrate the foramen region with 3 to 5 minims of anesthetic solution. Allow a short time for anesthesia to take place. Place a thumb or finger against the tissue under the mandible and a thumb or finger inside the lip against the tissue overlying the mental foramen. Compress the tissue between the thumb and finger and select a point 13 mm. to 15 mm. above the inferior border of the mandible as the probable vertical location of the foramen. Keeping in mind the variations in the horizontal positions of the foramen, estimate the probable location of the foramen by its relation to the second bicuspid. Prepare the tissue again for insertion of the needle and with a sharp needle of less that 25 gage, directed from a slightly posterior-superior angle (Fig. 7), carefully insert the needle to the bone. Explore the field until the needle penetrates the foramen. Advance the needle slowly, depositing a small amount of solution as the needle is passed into the mental canal. Insert the needle about 4 or 5 mm. into the canal until bone is contacted and with delicate pressure deposit 4 to 5 minims of anesthetic solution. The solution will follow into the inferior dental canal and the structures supplied by the incisive and mental nerves will be anesthetized immediately.

Fig. 7 • Demonstrating the orifice of the mental foramen opening in a posterior-superior direction and the line of needle insertion to enter the canal

Fig. 6 • Demonstrating the location and branching of the mental nerve

1850 David Whitney Building

Partial dentures with precision attachments

H. D. Grubb, D.D.S., Cleveland

A trend toward higher standards of accomplishment in dentistry is apparent to all. Most dentists desire sincerely to adopt and excel in the new technics and scientific developments which are being provided the profession. A desire to attain greater accuracy and thoroughness and to acquire a more acute understanding of the part played by appearance as well as function in restorations is growing in dental ranks. This trend among dentists is matched by a similar awareness among the informed public of what the best methods in dentistry can accomplish and a keen desire to have that best.

Nowhere is the trend toward higher standards more noticeable than in the field of restorative dentistry. Where teeth are missing or have failed in function, ever more ingenious and successful devices are coming to the rescue. A high order of skill has been arrived at in reproducing the appearance of living tooth tissue. This skill has been developed to such an extent that often the casual observer is unaware of any substitute. A similar ability to reproduce the mechanics of mastication promises to be one of our proudest accomplishments.

METHODS OF CHOICE

The methods of attacking these mechanical problems are few, and they differ in no way in their ultimate purpose which is the construction of restorations that will function over a period of years with a minimum of damage to the remaining natural teeth and their supporting structures. As in other health services, there are always the methods of choice and the methods of necessity. Some mouths present so many unfavorable factors that the methods of choice must give way to the methods of necessity. Also, there is the economic factor to consider. Much as we dislike to face the fact, we must admit that the economic phase of dentistry is always with us and will decide the ultimate choice of method in a large majority of cases. The enthusiastic idealist who regales his listeners with high-sounding phrases about minimizing the economic phase and concentrating on giving every patient the most ideal service possible, runs soon into many snags. His unquenchable enthusiasm, however, for this altruistic ideal, has merit. Patients do appreciate the effort to provide the same service to all, regardless of cost. They respond by offering to do their part. There is no doubt that improvement in the dentist's aptitude and skill and in his ability to construct restorations of the highest specifications will result in a bet-

Presented before the American Academy of Restorative Dentistry, San Francisco, October 15, 1949.

ter type of practice. People in a community learn quickly who is a good dentist and who is a poor one.

There are some clear-cut differences in the methods employed to install and retain partial dentures. The two chief methods of retention are by clasps around the abutment teeth and by precision attachments which are retained within the circumferences of the abutment teeth. It is generally agreed, especially by those who have had experience with both types, that the precision attachment partial denture, where the conditions are favorable, is superior in many ways to the clasp denture. However, because of certain factors which must be considered, the great majority of dentures constructed in this country are made and will continue to be made with clasp retention. It goes without saying that the proper construction of the precision attachment dentures requires much more time and skill than the construction of clasp dentures. This paper will confine itself chiefly to a discussion of the advantages offered by the precision attachments and to the greater satisfaction in function and appearance provided by the precision attachments on removable dentures. No attempt will be made to emphasize so-called "correct procedures," since there are none if each case is considered as a special problem presenting both favorable and unfavorable factors. Rather, the desire is to report on certain procedures which, in my own experience, have been found satisfactory.

Since every mouth presents its own peculiar set of health conditions, which are interpreted by every operator from the background of his own training and experience, it seems unwise to stress what is desirable or undesirable in restorative work. All that I can stress is that in my own experience the fixed bridge, where indicated and properly installed, has been found the most successful, not only from the standpoint of health and natural function, but from the standpoint of appearance and lasting qualities. The fixed bridge is the easiest to care for, comes nearer to satisfying the patient's pride and peace of mind, and seems more nearly a part of his natural masticatory mechanism than any removable appliance.

The fixed bridge, however, is limited in its application. Its best chance of survival is in a short span where few teeth are missing and the remaining teeth are adequate for the purpose. Beyond these limitations other methods of restoration must be considered. If the distribution and availability of the remaining teeth are favorable, restoration of function and appearance can best be made by means of the removable partial denture.

Figure 1 illustrates one type of precision attachment appliance. The upper right first bicuspid, the upper right molars and the upper left second bicuspid were missing (Fig. 1A and B). The occlusal surface of the remaining teeth were worn badly. This case required an occlusal reconstruction with a slightly increased maxillomandibular opening. The upper right first bicuspid was restored by means of a fixed bridge with a soldered union to both retainers. This type of appliance provides maximum support for the second bicuspid which carries a precision attachment. Three precision attachments and a lingual arm on the distal extension provide ample retention for the removable partial denture.

Gold occlusal surfaces on the upper molars occlude with gold restorations on the lower molars, preventing the unequal wear which occurs when porcelain occludes with gold (Fig. 1C). The upper left molars are interlocked by a lug soldered to the first molar crown and resting in a recess in the inlay on the second molar. This prevents extrusion of the second molar.

Figure 1D shows the appliance installed. In normal lip movements there is practically no display of metal. The patient had worn a clasp retained den-

ture and found the visibility of the clasps objectionable.

ESSENTIALS FOR SUCCESS

Certain essentials for success in partial dentures, as in all restorative dentistry, unquestionably are demanded. Of the highest importance is the presence, or possibility of establishing, a favorable occlusion. But any occlusion, however perfect it may have been at the time of installation, should be inspected at regular intervals and corrections made if necessary. It is difficult to maintain a well-balanced occlusion as there is always the possibility of a slight intrusion or a slight shifting of the teeth. This is particularly true of cases that include extensive partial restorations, even though all possible means have been employed to limit and favorably direct the stresses.

Another essential that must be considered is the size and health of the dental pulp. Normal pulps decrease gradually and the dentin becomes more consolidated as the age of the patient advances. Therefore, precision attachments usually are more satisfactory for older patients than for younger patients with larger dental pulps. This does not rule out the necessity of always making certain of the pulp's size and position and the degree of calcification by roentgenographic diagnosis and the tooth's response to diagnostic stimuli. Where the diagnostic evidence is favorable, the preparation of the teeth for precision attachments, is not radical but conservative, particularly when the advantages of precision attachments over clasps are considered. The influence of age on calcification and the degree of the reduction of the pulp are vitally important to the establishment of safe restorations.

The role of adequate saddles and bars in all partial denture work is well recognized. Fully-extended and well-adapted saddles and palatal bars of ample width play their part in sharing the occlusal

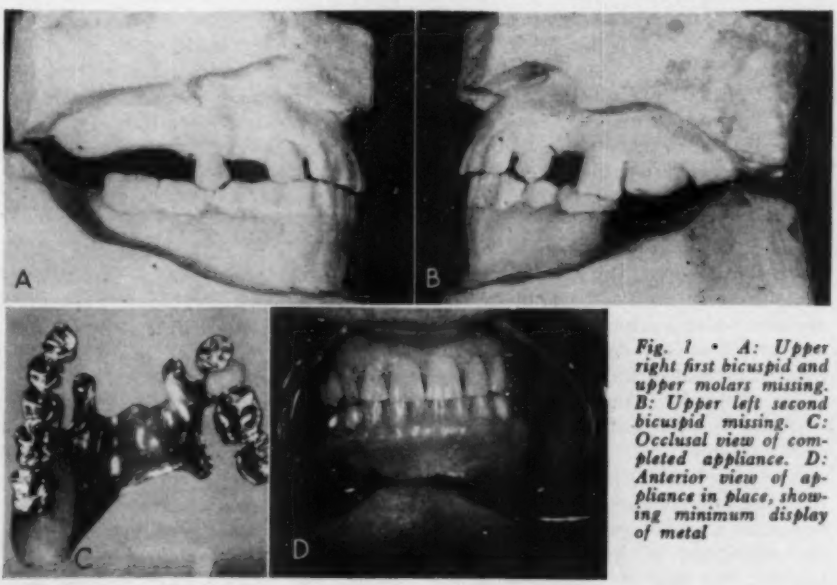


Fig. 1 • A: Upper right first bicuspid and upper molars missing. B: Upper left second bicuspid missing. C: Occlusal view of completed appliance. D: Anterior view of appliance in place, showing minimum display of metal

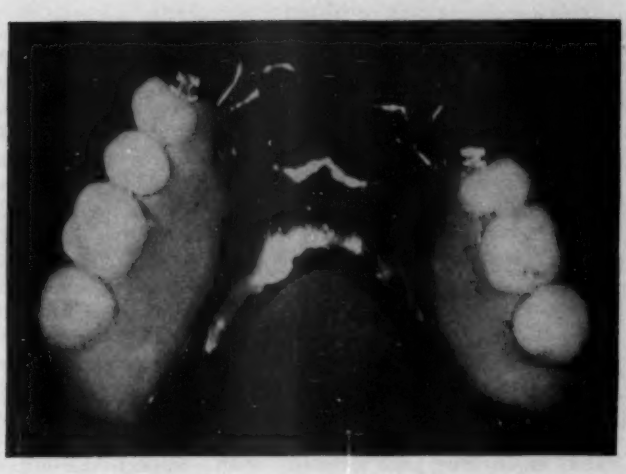


Fig. 2 • A precision attachment partial denture worn by a patient for 10 years and which gives promise of many more years of service

load and, because of the form of the ridges and palate, they offer the possibility of lessening the lateral stresses which are imposed on the abutment teeth.

For many reasons the precision attachment is generally regarded as superior to the clasp. However, because of the greater amount of care, skill and accuracy demanded in its execution, precision work can never be the choice for many. But this does not explain why many patients, who want and can afford the most accurate type of dental service, are wearing appliances which in no way can be considered the best that dentistry has to offer.

There has been much improvement in the design and construction of clasp dentures. There are competent dentists who design their own partial dentures and maintain strict supervision over their manufacture. But far too many clasp cases are designed and executed so poorly that they are bound to be destructive agents in the mouth.

ADVANTAGES OF PRECISION ATTACHMENTS

Precision attachments offer a means of meeting the increasing and insistent demand for more comfortable and longer lasting partial dentures. I have made many precision attachment partial dentures for patients who had worn the clasp type. Invariably, these patients express their appreciation of the increased comfort and satisfaction which the new work provides. There is, first, the emotional uplift and pleasure provided by the avoidance of a full denture. Often the patient has but a few teeth left. These may be the cuspids and some or all of the incisors. Cuspids and incisors are not satisfactory for clasping. However, by using precision attachments, such teeth can provide retention for a partial denture that may function for many years.

Figure 2 shows a partial denture worn by a patient for 10 years and which gives promise of many more years of service. In this case the double abutment principle was employed. Three-quarter crowns were placed on the left cuspid and first bicuspid and joined by a soldered union. The same type of appliance was placed on the right lateral incisor and cuspid. These appliances enabled the supporting structures to tolerate the additional stresses which were imposed on the abutment teeth.

Of all the advantages offered, how-

ever, that of avoiding a full denture seems to give the greatest satisfaction. The unhappy psychologic effect of any artificial aid to living is well known. The first pair of eyeglasses, the first artificial teeth and the first toupee are resented and bemoaned. The middle-aged patient, whether he be in his middle forties, fifties or sixties, does not feel old. He actively resents being pigeonholed as aged. It is the duty as well as the privilege of the dentist to preserve and enhance the youthful appearance and spirit of his middle-aged patients.

Added to the contribution of mental comfort is the contribution to health made by partial dentures. The masticatory organs have been replaced, which means better health. In addition, the precision attachment is less bulky than the clasp type. The food impaction that is found about many clasps is missing in the precision appliance and to many patients the invisibility of the precision attachments affords much satisfaction. The unavoidable visibility of clasps announces that the surgeon has arrived. Another advantage of the precision attachment is that the contact of metal is against metal. Carious areas are found in many cases where the clasp is in contact with tooth structure. Without doubt, the degree of caries susceptibility, the design of the clasps and the care of the clasps by the patient are factors in this problem. Nevertheless, when the widespread damage which has occurred in the presence of clasps is considered the advantages of the precision attachments readily are apparent.

Another practical advantage inherent in precision attachments is that the normal contour of the abutment teeth is maintained. Clasps about a tooth produce, in effect, over-contoured surfaces which interfere with the necessary frictional stimulation of the gingival tissues in masticating.

The precision partial denture functions in the same way and displays some of the best features of the fixed bridge. Retention is secured by the internal friction of the attachment parts. With precision attachments stresses are guided in a natural direction. Saddles are rigidly fixed to the abutment teeth by the precision attachments. Where the saddles are connected by strong, rigid lingual or palatal bars the abutment teeth support each other. Lateral stresses, which are the true wreckers, are distributed to all the abutment teeth. Saddle leverage, which would be excessive on adjoining teeth, is resisted by being transferred to and shared by abutment teeth on the opposite side of the arch. The comparatively flexible clasp construction does not fulfill so adequately this important requirement for stress distribution.

Figure 3 illustrates this point. In this case the upper left second molar had coalesced roots which would not give adequate support for a cuspid to second molar fixed bridge. A removable partial denture with four precision attachments, two occlusal rests and a wide, rigid palatal bar forces all of the abutment teeth to share lateral stresses.

Little concern need be given to the fact that in this recommended construction teeth are rigidly joined together. Teeth move in function, but the movement is very slight. The average width of the periodontal membrane is 0.20 to 0.30 mm. and in any restoration, fixed or removable, it would seem to be impossible to approach absolute fixation to the degree that the tissues would be understimulated. The problem is how to avoid excessive movement and over-stimulation of the supporting structures rather than immobility.

STANDARDIZATION OF PROCEDURE

In all restorative work, where artistry must be combined with accuracy, judgment and manual dexterity, it is of benefit to the dentist to have as many procedures as possible standardized and

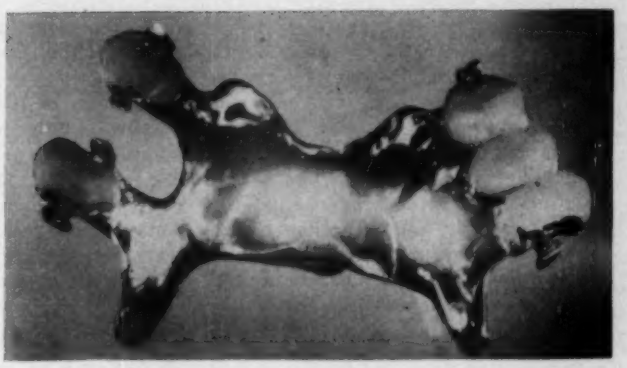


Fig. 3 • A removable partial denture with four precision attachments, two occlusal rests and a wide rigid palatal bar

codified. Precision attachment partial denture construction lends itself admirably to standardization. Each technical step is an indispensable requisite to the installation of a satisfactory denture. Clasp work does not show such studied perfection. There is a wide variation in clasp design. The counteracting arms of clasps are rarely in the same horizontal plane, because of the form and position of the teeth. Clasps are in contact with multiple surfaces of the teeth and there are many points where leverage is possible. For these reasons clasp design is an involved problem. The problem is to design a strong clasp that will engage a tooth sufficiently to be an effective retaining device without imposing wedging pressures on the abutment tooth. The adjustment of clasp arms, which is often required because of accidental bending or in order to increase friction, involves definite hazards. Any pressure caused by the spring action of a clasp will move a tooth. This movement changes the occlusal relationship and has a direct effect on the health of the supporting structures.

A prime consideration in any plan to limit stresses on the abutment teeth is the establishment and maintenance of proper relation between the tooth and the ridge support as they react to the forces of occlusion. Such relation enables the ridges to support their full share of the occlusal load. Only under biting pressure should the key portion of the attachment be seated fully. At the same time the saddles should engage the ridges firmly. With the pressure removed the elasticity of the tissues permits them to resume their normal contour, with a corresponding change in the position of the key attachments. The saddles should move with the mucosa rather than on it. In this slight movement precision attachments merely guide the denture to place without causing torsion on the abutment teeth. The intermittent pressure of the saddles also provides the essential stimulation of the underlying mucosa and bone. The desired relationship of the saddles to their attachments is provided for either in the impression technic or by raising the key portion of the attachments before soldering them to the saddles.

EXCEPTIONS FOR USE

With few exceptions precision attachments may be employed for all cases where the conditions are favorable for removable partial dentures. One of the exceptions, as previously stated, is the young patient with large dental pulps. Fortunately the majority of patients needing this type of service have reached the

age where the preparations may be made safely as many of the abutment teeth have had caries and fillings and the pulps have decreased in size. Provision for smaller attachments may be made in preparations on sound or essentially sound teeth. The avoidance of frictional heat while making the preparations, and the proper treatment and protection of the cut dentinal surfaces will reduce irritation to a point where the chances of pulp degeneration are almost negligible.

Another exception to the successful employment of precision attachments is short teeth. Attachments should be at least 4 mm. in length. Full length attachments are preferred as they are stronger and give more frictional retention. Because of the prior wear and tear that has taken place in many mouths requiring partial dentures, the maxillomandibular opening has been decreased. The operator must be his own judge as to how far dental retrogression has gone to justify the extreme or generalized plan of occlusal reconstruction. Where a reconstructive program has been successfully carried out the benefits are real and many. The additional space made available allows for longer, stronger and more retentive attachments for both fixed and removable restorations. It allows for the construction of new occlusal surfaces designed for efficient functioning and for distribution of the masticatory load in keeping with the demands of health. The additional space made available also eliminates the dangerous necessity of destroying further those surfaces of the teeth which already are affected by abrasion.

Teeth which markedly are tipped are not satisfactory abutments for either clasp or precision attachment partial dentures. Teeth with a moderate degree of tipping often give long service. In such cases the precision attachment has a definite advantage over the clasp, since it forces the tooth to maintain its position while the occlusal rest of a clasp tends to increase the degree of tipping.

BONE FACTOR

The period of time over which a properly constructed partial denture may be expected to function depends to a great extent on the physical reserves of the patient. How will each patient react to the course laid out for him? How will the dental structures stand up to the barrage laid down for them? A most important

Fig. 4 • Precision attachment appliance constructed for a patient who has a positive bone factor, well-supported abutment teeth and a large dense alveolar ridge

influence in dental prognosis is what Glickman calls the bone factor. In his article,[1] "The Experimental Basis for the Bone Factor Concept in Periodontal Disease," Glickman pictures the bone factor as a characteristic individual ability to regulate bone loss or bone rebuilding within the body. He regards alveolar bone in systemic health and disease as reflecting the prevailing status of the entire skeletal system in terms of relative predominance of bone formative or bone resorptive changes. The nature of the bone factor is regarded as positive or negative according to the predominance of the formative or resorptive influence. When the individual bone formative capacity is good a positive bone factor exists and the destructive effect of local factors on alveolar bone is minimized. When throughout the skeletal system a tendency toward bone résorption exceeds the individual bone formative capacity a negative bone factor exists and the destructive effect of local factors on alveolar bone is exaggerated.

Figure 4 illustrates a partial denture constructed for a patient who has a positive bone factor, well-supported abutment teeth and a large dense ridge. The saddle of this denture was well extended and adapted. The saddle adaptation will be maintained by rebasing when found necessary. Stress-breakers were not employed in this case. A precision attachment was placed in the mesiolingual portion of the retainer on the lower right molar and an arm was extended buccally to facilitate removal of the denture by the patient. Lingual arms are employed in all cases where there is only one precision attachment on the side of an arch. These add to the retentive features of the denture and little adjustment of attachment parts is necessary. The arms rest in slight depressions on the lingual surfaces of the retainers. The parts of the precision attachments engage each other sufficiently before the arms come in contact with the retainers, thus avoiding wedging pressures on the abutment teeth.

Figure 5 illustrates a partial denture constructed for a patient with a negative bone factor. The bony support of the right molar is such that it will be retained but a few years. Therefore the restoration

1. Glickman, Irving, The experimental basis for the bone factor concept in periodontal disease. J. Periodont. 20:7 (Jan.) 1949.

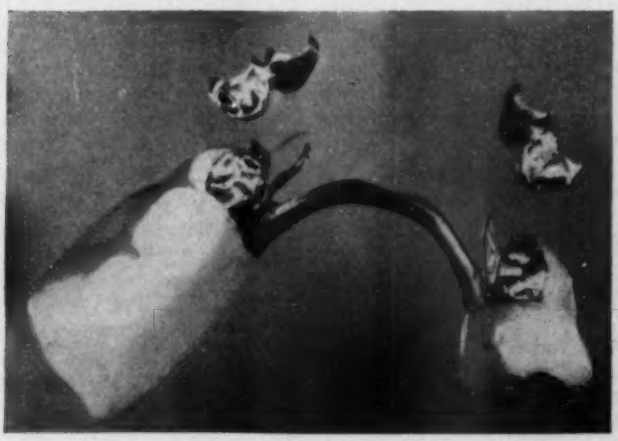


Fig. 5 • Precision attachment constructed for a patient who has a negative bone factor

was planned as a bilateral distal extension. The double abutment principle and stress-breakers were employed in the construction. When the molar is lost it will be placed in the saddle which will be extended distally.

The importance of the bone factor in partial dental construction is readily apparent. By means of roentgenographic diagnosis and study of the conditions observed in the mouth the nature of the bone factor in the individual case may be determined closely. Additional stress is imposed on any tooth which serves as an abutment and the adequacy of the supporting bony structures to withstand and counteract these added stresses should be the prime consideration in making recommendations for restoration.

1322 Hanna Building

Balancing the occlusion of partial dentures

Henry A. Collett, D.D.S., Philadelphia

One of the most important considerations in the construction of partial dentures is balanced occlusion; yet this aspect is sometimes overlooked. Its importance is all too often overshadowed by the design of various parts of a denture such as direct retainers. The design of a denture may be perfect, but if the occlusion is not right the denture cannot function efficiently.[1]

Most of us have seen partial dentures that function well even though the design was poor or the denture ill-fitting. If these dentures were examined closely it would often be found that the occlusion was good.

The excursions of the mandible exert forces that may tend to unseat the denture and damage the supporting structures of the abutment teeth. The lateral excursions create forces laterally; the protrusive excursions and the impact of the cuspal planes exert forces anteroposteriorly. When the occlusion is balanced the detrimental effect of these forces is minimized. This will better preserve the remaining teeth as well as restore them to better function.

Before attempting to balance the occlusion of the replacement, the occlusion of the remaining natural teeth should be studied. To do this it is essential to make study casts.

It will be found that some bites are "locked" by only a few interfering cusps. After careful consideration these interferences should be removed by selective grinding.[2] No set rule can be given for balancing the natural teeth before constructing a partial denture. However, the operator should be particularly careful not to reduce the vertical dimension. Some thought might be given to grinding

Some of the ideas in this paper were obtained from Dr. Joseph Hoffman of Milwaukee, Wisconsin.

The opinions or assertions contained in this article are the private ones of the writer and are not to be construed as official or reflecting the views of the Navy Department or the naval service at large.

Commander, DC, USN.

1. Doxtator, L. W., Relation of balancing the occlusion to other steps in the construction of removable bridgework. J.A.D.A. 15:482 (March) 1928.

2. Sears, Victor H., Problems of occlusion in partial denture construction. J.A.D.A. 17:434 (March) 1930.

the buccal cusps of the maxillary teeth and the lingual cusps of the mandibular teeth (if the bite is normal) in order to avoid this vertical reduction. This, of course, would not work if the patient presented a cross-bite.

This selective grinding will help preserve the supporting structures of the teeth involved by eliminating occlusal trauma in the various mandibular excursions.[3] It will also aid in balancing the denture occlusion.

To minimize occlusal interference, consideration should also be given at this time to the position of the occlusal rests and space established for them, if necessary, by reducing the marginal ridge slightly.

Teeth that have tipped because of drifting and present a steeply inclined occlusal surface should be considered for correction by onlay attachments. Extremely high onlays are not advisable because they make the crown too long in relation to the root, thus creating unfavorable leverage. This may break down the supporting structures of the tooth involved.

Often when areas have been edentulous for a considerable period of time the teeth in the opposite jaw have drifted occlusally. These extruded teeth may interfere with the excursions of the mandible to such an extent that the condition cannot be corrected by grinding. When this is the case these teeth should be extracted.

It will be found when examining patients for partial dentures that a certain number of them have bites locked in centric position by a marked overbite and very limited overjet. There will also be some whose bites are locked because the cuspal inclined planes are particularly steep and there are mouths in which both these conditions are present. Very little balancing can be done for these patients. Usually all the operator can do is to grind the replacement teeth to a good centric occlusion.

Another group of patients will be found who have a considerable overbite together with a marked overjet. They are somewhat limited in their protrusive excursion, but have free movement laterally. Dentures for them can be balanced in their lateral and limited protrusive excursions.

A final group will be found to have freedom of movement in all excursions. Much can be done to balance the occlusion for these patients.

Partial dentures replacing teeth in various parts of the dental arch present different problems and, therefore, should be handled differently. For instance, the maxillary partial denture occluding with the patient's natural mandibular teeth may be balanced with less difficulty if it is handled in a somewhat different manner than if it were occluding with a mandibular restoration. When both maxillary and mandibular dentures are constructed in occlusion with each other, the teeth on each can be arranged to compensate for the various excursions of the mandible. This is more difficult when a denture is made to occlude with the patient's natural teeth.

There are also cases where a combination of these two problems exists. Some of the denture teeth occlude with the patient's natural teeth and some occlude with an opposing replacement.

For clarification these different conditions can be divided into three groups: (1) maxillary or mandibular partial dentures occluding with the patient's natural teeth; (2) maxillary and mandibular partial dentures occluding with each other; (3) maxillary and mandibular partial dentures occluding in part with an opposing restoration and in part with the patient's natural teeth.

Several of the methods recommended for balancing the occlusion of complete

3. Miller, S. C., Textbook of Periodontia, ed. 2, Philadelphia, The Blakiston Company, 1943, p. 296.

dentures may be satisfactorily applied to partial replacements.[4,5,6]

OCCLUSION OF MAXILLARY OR MANDIBULAR PARTIAL DENTURES WITH PATIENT'S NATURAL TEETH

In order to balance the occlusion of dentures falling in the first category, a bite-block is prepared in the usual manner. To assure an accurate fit it may be well to line the bite-block with a zinc oxide impression paste. This may be done by placing some of the paste in the bite-block and then placing it on a tinfoiled cast. The excessive tinfoil is reflected over the periphery.

The bite is then trimmed so that its occlusal surface is directly over the opposing teeth and there is enough clearance so that the patient can move his mandible in all positions without touching it with his opposing teeth. After the bite is correctly trimmed, about 4 or 5 mm. of soft utility wax is placed over the occlusal surface. It is inserted into the mouth and the patient is instructed to bite in centric, right, left lateral and protrusive positions (Fig. 1A).[7] The completed bite with the registration of all the possible positions of the mandible is removed from the patient's mouth and sealed to the cast, and the case is mounted on an articulator. The teeth are then ground to this "chewed-in" bite (Fig. 1B) and the set-up is tried in.

While the trial denture is in the patient's mouth, particular attention should be given to the buccolingual position of the replacement teeth. It may be difficult to obtain this position accurately on the articulator because the chewed-in bite registers the various positions of the mandible and centric position may not be

4. Jaffe, S. S., Simplified technique for the construction of full dentures. D. Digest 45:268 (July) 1939.

5. Jaffe, S. S., Simplified full denture technique. D. Digest 52:382 (July) 1946.

6. Paterson, Alexander H., Construction of artificial dentures. D. Cosmos 65:679 (July) 1923.

7. Cole, F. L., Construction of a balanced partial denture. J. Canad. D. A. 10:161 (April) 1944.

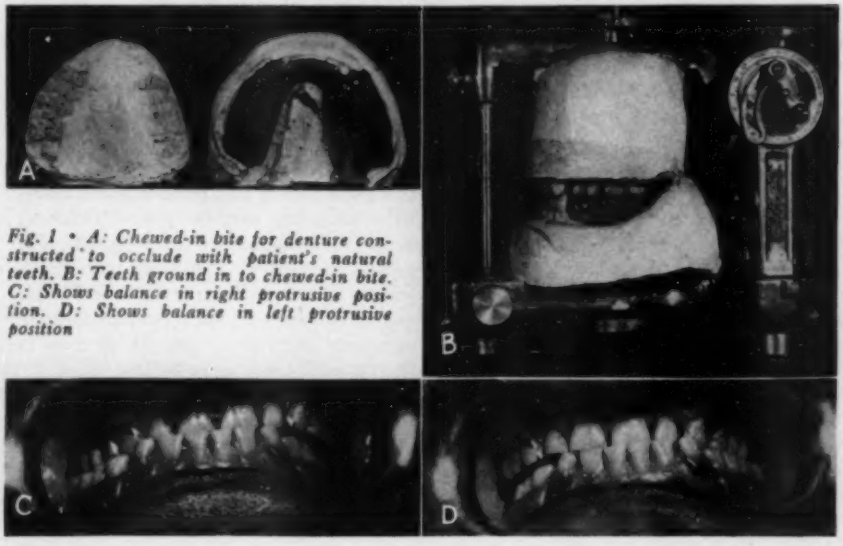


Fig. 1 • A: Chewed-in bite for denture constructed to occlude with patient's natural teeth. B: Teeth ground in to chewed-in bite. C: Shows balance in right protrusive position. D: Shows balance in left protrusive position

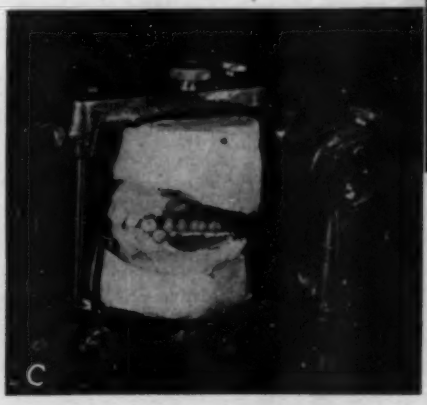
clearly illustrated. If the buccolingual position of the replacement teeth is not correct the amount of discrepancy should be observed, the trial denture returned to the articulator and the correction made. The case is then processed.

The cast may be preserved (if the denture is processed in metal or acrylic resin) and replaced on the articulator in order to grind further any teeth that may have moved slightly during processing. The replacement is then finished and polished and the final selective grinding and milling is accomplished in the mouth over a period of several days to allow for tissue changes (Figs. 1c and 1d).

It may be noticed that the replacement teeth do not have the maximum occlusal

Fig. 2 • A: Ground-in bite-blocks for a case where maxillary restoration is opposed by mandibular restoration. Bites are secured together by plaster on arms of tracer. Bites were lined with zinc oxide paste to insure more accurate fit

B: Case mounted on articulator



C: Maxillary teeth set to mandibular bite-block

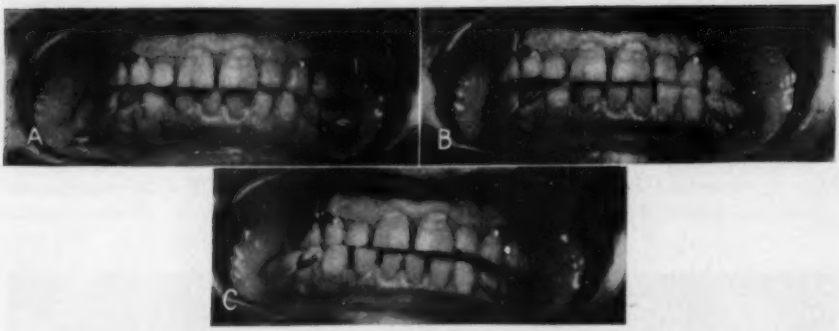


Fig. 3 • Maxillary and mandibular restorations in place, A, in centric position; B, in left lateral position; C, in right lateral position

contact in centric position. This is because of the various inclinations of the patient's remaining natural teeth. If the maximum occlusal contact was accomplished in centric position, there would be cuspal interference in the various other positions.

OCCLUSION OF MAXILLARY AND MANDIBULAR DENTURES WITH EACH OTHER

To balance the occlusion when maxillary and mandibular dentures occlude with each other, bite-blocks are constructed as previously described. The occlusal surfaces are trimmed so as to establish an occlusal plane as nearly as possible parallel to a line drawn from the tragus of the ear to the ala of the nose. This should be considered as merely a starting point for further trimming. Every patient's plane of occlusion is not necessarily parallel to this line. It is considerably more important to place the plane of occlusion in its proper vertical position between the maxillary and mandibular ridges to prevent undue leverage of either denture. The maxillary bite-block is then placed in the patient's mouth and a face-bow reading is taken. The maxillary cast is mounted on the articulator.

Both bite-blocks are then placed in the mouth and further trimmed until there is a clearance of several millimeters between them when the patient is in correct vertical position. Four or five millimeters of soft utility wax is then placed on the occlusal surfaces of both the maxillary and mandibular bite-blocks and covered with heavy tinfoil. This will raise the vertical dimension slightly. The patient is then instructed to move his mandible through all the excursions until the bites are ground down to the correct functional vertical position.

A Gothic arch tracer of the Hight type is then attached to the bite-blocks and a tracing is made. The bites may be secured together by placing some quick setting plaster around the arms of the tracer (Fig. 2A). They are then secured to the casts and the mandibular cast is mounted on the articulator (Fig. 2B).

The Gothic arch tracer is removed from the bites and the condylar and incisive guidances of the articulator are adjusted so that the occlusal surfaces of the bites are in contact with each other in all positions.

The maxillary bite is then removed from the cast and the maxillary teeth are set to the plane established on the mandibular bite (Fig. 2C). The mandibular

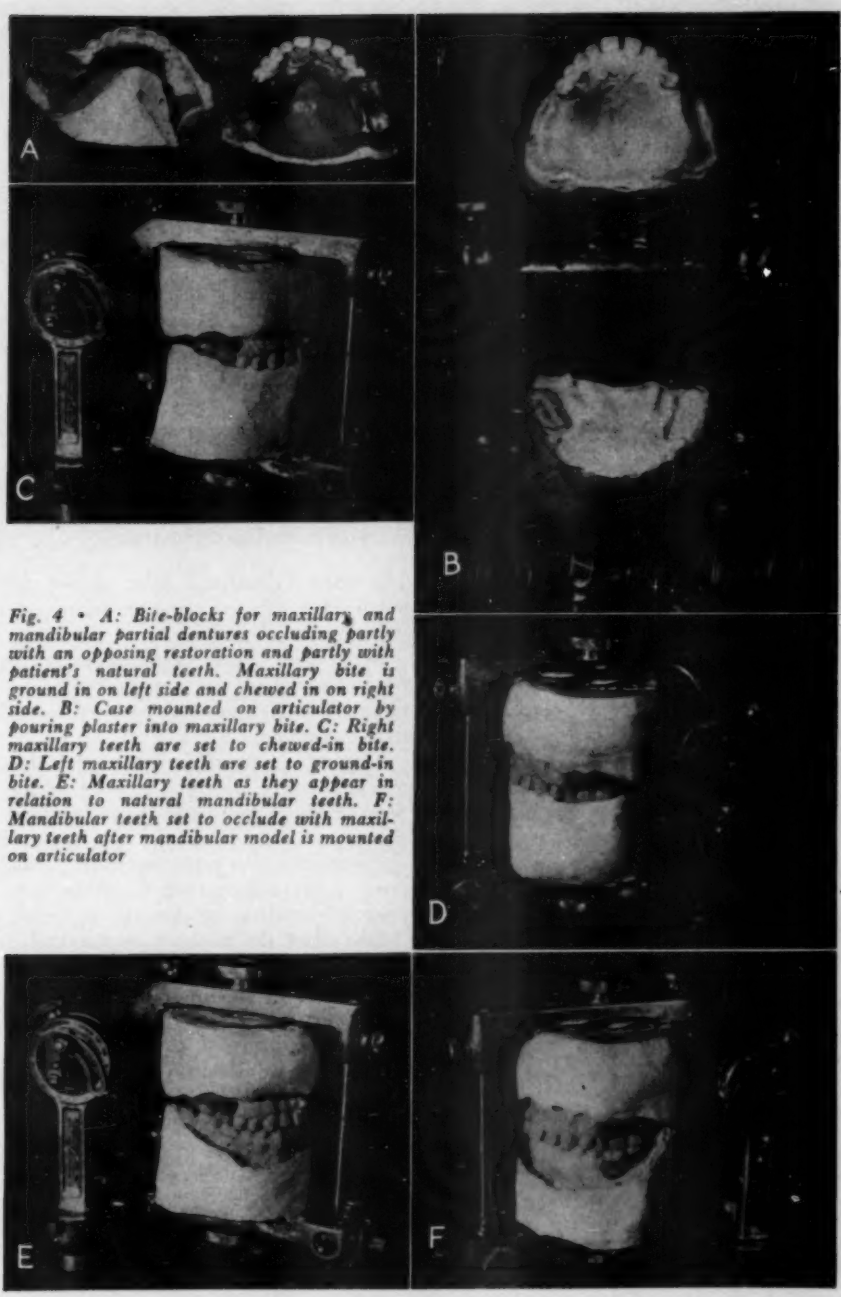


Fig. 4 • A: Bite-blocks for maxillary and mandibular partial dentures occluding partly with an opposing restoration and partly with patient's natural teeth. Maxillary bite is ground in on left side and chewed in on right side. B: Case mounted on articulator by pouring plaster into maxillary bite. C: Right maxillary teeth are set to chewed-in bite. D: Left maxillary teeth are set to ground-in bite. E: Maxillary teeth as they appear in relation to natural mandibular teeth. F: Mandibular teeth set to occlude with maxillary teeth after mandibular model is mounted on articulator

teeth are then set to occlude with the maxillary teeth.

After the case is processed it is again mounted on the articulator and the teeth are selectively ground and milled. Final grinding and milling is accomplished in the patient's mouth over a period of several days to allow for slight tissue changes (Figs. 3A, 3B and 3C).

OCCLUSION OF MAXILLARY AND MANDIBULAR DENTURES WITH OPPOSING RESTORATION AND WITH PATIENT'S NATURAL TEETH

Balancing the occlusion for maxillary and mandibular partial dentures occluding in part with an opposing artificial denture and in part with the patient's natural teeth is accomplished by using a combination of two methods described.

Bite-blocks are prepared with clearance of several millimeters. Four or five millimeters of soft utility wax is placed over the areas where the maxillary and mandibular restorations will oppose each other. Heavy tinfoil is placed over this wax and the bite-blocks are placed in the mouth. The patient is then instructed to "grind them in" by moving the mandible through the various excursions. After the bites are ground in the bite-blocks are removed from the mouth and several millimeters of soft utility wax is placed over the areas where the restorations will oppose the patient's natural teeth. The bites are again placed in the patient's mouth and the patient is instructed to bite into the soft wax in the various excursions of the mandible (Fig. 4A). They are again removed from the patient's mouth and either the maxillary or mandibular bite is placed on its respective cast. This is mounted on the articulator (without the opposing cast) by pouring plaster into the chewed-in and ground-in bite (Fig. 4B). The teeth are set to this bite after which the bite-block is removed from the articulator and the remaining cast mounted in its place (Figs. 4C, 4D and 4E). The remaining teeth are then arranged to occlude with those that have already been set up (Fig. 4F). After the case is processed it is remounted on the articulator and the teeth are ground to compensate for any movement that may have taken place during the processing procedure. Final adjustment is then made in the patient's mouth over a period of several days to allow for tissue changes.

SUMMARY AND CONCLUSION

The patient's natural teeth should be balanced by selective grinding before constructing the restoration.

Many cases (where the lateral and protrusive excursions are apparently locked by interfering cusps) can be freed by selective grinding.

The technic described is not applicable to cases where the bites are locked by deep overbites and steep cuspal inclined planes.

Partial dentures replacing teeth in different parts of the mouth should be handled differently to balance the occlusion.

Several of the methods recommended for balancing the occlusion of complete dentures may be satisfactorily applied to partial dentures.[4, 5, 6]

27-3 Drexelbrook Drive, Drexel Hill

Naval hospital dental service: intern and residency programs

Ralph W. Taylor, D.D.S., San Diego, Calif.

This paper presents an outline of the Navy's hospital dental services, and its programs of dental internships and residencies.

The requirements approved by the Council on Dental Education of the American Dental Association[1] have served as a guide to those in the Dental Corps who sought to formulate and implement the several programs into the Navy training of dental officers. The action of the committee in setting up these requirements is the result of anticipation for the needs of dentistry in the future. It is apparent that training beyond the undergraduate level is becoming a necessity. The rapid development of science and particularly the advances made in dental medicine have placed a tremendous load upon the dental schools. It is impossible in crowded schedules to teach all that should be taught, or to provide, in many cases, all the clinical experience necessary to properly prepare graduates for modern practice.

Another factor which demands the extension of graduate and postgraduate education is the requirement of the specialty boards that a candidate will have completed a recognized form of postgraduate education in order to qualify for consideration for certification.

CAREER PLAN FOR NAVAL DENTAL OFFICERS

These trends have not gone unnoticed by the Dental Division of the Bureau of Medicine and Surgery of the U. S. Navy. Planning at the level of the Bureau is done by the professional branch of the Dental Division. This office has as one of its objectives the continued and progressive education of naval dental officers. It endeavors at all times to correlate the needs of the profession with the requirements of the service. One of the most constructive features of the planning done by the professional branch is the development of the Career Plan for naval dental officers.

According to this plan, during the first five years of service, the assignments include one year of naval dental internship, two years of experience in rotated dental practice in a large dental activity in the United States, followed by two years of experience in the dental department of a ship or a station beyond the continental limits of the United States. This is the period of general training which includes short postgraduate and refresher courses. The long span from 5 to 21 years of service is the period of specialized and advanced training. During this period the dental officer has the opportunity to at-

Presented before the Section on Hospital Dental Service, ninetieth annual session of the American Dental Association, San Francisco, October 18, 1949.

The opinions or assertions contained in this article are the private ones of the writer and are not to be construed as official or reflecting the views of the Navy Department or the naval service at large.

Captain, DC, USN, United States Naval Hospital.

1. Council on Dental Education, Requirements for the approval of hospital internships and residencies. J.A.D.A. 33:508 (April 1) 1946.

tend general and specialized courses of six months each at the U. S. Naval Dental School, National Naval Medical Center, Bethesda, Maryland, and short refresher and postgraduate courses in civilian institutions. Also in this period, opportunities are provided for long postgraduate courses and specialized courses at civilian institutions, which lead to graduate degrees.

It is a policy of the Dental Division of the Bureau of Medicine and Surgery that those officers who wish to qualify for certification by the specialty boards be given every opportunity to do so during this period.

Higher level military and other training is available during the latter part of this period. These courses are offered at the Industrial College of the Armed Forces, the Armed Forces Staff College, the Naval War College, the Amphibious Warfare School, and the National Bureau of Standards.

All of these courses are training in preparation for advancement. In this manner, capable senior dental officers are developed for conducting the dental services in naval hospitals, dental clinics of all types, and for other responsible positions.

NAVAL HOSPITAL DENTAL SERVICE

The professional organization of the naval hospital comprises four services: surgical, medical, dental and dependent. The chiefs of services are responsible to the commanding officer for the proper functioning of their respective departments.

The senior dental officer attached for duty to a naval hospital is the chief of the dental service. He has the same status in his relation to the medical officer in command, as other chiefs of services of the staff.

The duties of the chief of the dental service are as follows:

1. To act in an advisory capacity to the medical officer in command and to the executive officer, in all matters relating to dentistry and the dental service.

2. To organize the dental service in accordance with the precepts of modern scientific dentistry and supervise the performance of duty of all personnel assigned to the dental service.

3. To conduct a program of training for all personnel on duty in the dental service on subjects appropriate for improving their knowledge and increasing their efficiency.

4. To arrange regular meetings of the personnel of the dental service for thorough review and analysis of the clinical activities.

5. To participate in all staff meetings and clinical conferences.

6. To guard the best interest of patients in caring for diseased or traumatic conditions of the face, jaws, neck and oral cavity, consulting with the medical or surgical service whenever the interest of the patients so requires, particularly when mutual professional fields are involved. He shall care for cases of mandibular or maxillary fractures, cysts, tumors of dental origin involving the teeth and surrounding structures, and closures of maxillary antral openings of dental origin.

Hospitalized dental cases are admitted to the dental ward. A dental officer assumes the same responsibility in regard to his patients as does the medical officer of any other ward. The ward dental officer makes sick calls, orders medication for his patients and maintains the clinical charts. When the patient is ready for discharge from the hospital the health record is signed by the ward dental officer and approved and signed by the chief of the dental service.

Operating room privileges, laboratory facilities and consultations with the various staff specialists are always readily available to members of the dental staff. Close cooperation between dentist and physician creates and maintains mutual respect.

It is in a hospital that a dentist has opportunity to serve his profession. There too, he associates with members of other professions and learns to appreciate more fully that complex mechanism—the human body.

NAVY DENTAL INTERN TRAINING PROGRAM

The Navy Dental Intern Training Program is the base for the Navy Dental Career Plan. The training period is 12 months. Six months of training is provided at the U. S. Naval Dental School, and another six months training is given at one of the following naval teaching hospitals—U. S. Naval Hospital, St. Albans, N. Y., U. S. Naval Hospital, Philadelphia, Pa., U. S. Naval Hospital, Portsmouth, Va., U. S. Naval Hospital, Great Lakes, Ill., U. S. Naval Hospital, San Diego, Calif., U. S. Naval Hospital, Long Beach, Calif. and U. S. Naval Hospital, Oakland, Calif.

The program was planned in this manner because of the exceptional facilities for instruction and training offered by the Naval Dental School and other institutions in the National Naval Medical Center at Bethesda, which includes the Naval Medical School, Naval Hospital, Naval Medical Research Institute and the Naval School of Hospital Administration, also other federal and civilian scientific and educational institutions in the immediate area.

Dental intern instruction at the Naval Dental School is essentially directed toward didactic training and major clinical instruction in restorative operative dentistry and prosthodontia, including crown and bridge prosthesis.

The curriculum for dental interns at the Naval Dental School is shown in Table 1.

Table 1 • Curriculum for dental interns at the Naval Dental School

Subject	Total didactic hours	Total laboratory & clinic hours
Medicodental science	126	4
Oral medicine	31	
Restorative operative dentistry	14	262
Oral surgery	15	8
Prosthodontia	45	192
Naval subjects	65	9
Dental research	27	
Clinics, conferences, medical aspects of radioactive isotopes	77	
Total	400	475

The intern spends a total of 26 weeks at the Naval Dental School. During the first three weeks of this period he is given intensive instruction in full denture, partial denture, and crown and bridge laboratory procedures. Lectures in these three subjects run concurrently with the laboratory courses. This is designed to acquaint the recent graduate with the technics and equipment used in the school and throughout the Navy. After this period the intern is rotated for a period of 10 weeks through 10 departments of the school. These are oral diagnosis and X-ray, periodontia and endodontia, oral surgery, crown and bridge, full denture and partial denture, operative dentistry, research (and the Naval Medical Research Institute), pathology, bacteriology and biochemistry.

During these periods the dental intern, under the guidance and supervision of the dental school staff, assists in the examination and care of patients. His experience includes assisting in the oral surgery department, performing operations under supervision in all departments and attending and participating in staff meetings and clinical conferences.

Ten weeks of clinical time is devoted to the care of patients in the operative and prosthetic clinic. This may appear to be a disproportionate amount of time to be devoted to strictly dental subjects. However, in the hospitals a much smaller

proportion of time is allotted these two subjects.

One week of dental intern training is allotted to a course given by the U. S. Naval Medical School in medical aspects of special weapons and radioactive isotopes. Another week is spent at the Marine Corps Schools, Quantico, Virginia, where the dental intern learns about the field aspects of military dentistry and medicine. A week is spent in visiting some of the institutions in the Washington area, such as the National Bureau of Standards, the National Institutes of Health, and the Naval Medical Research Institute. The dental intern is required to attend the monthly meetings of the District of Columbia Dental Society, and also lectures given at the Army Medical Center.

The Naval Dental School presents a special speaker or clinician each week to the combined officer postgraduate classes which include the dental intern group. This may be an outstanding dentist, physician, scientist or authority in some field of interest to the dental profession.

Table 2 • Dental intern training at the naval hospitals

Subject	Total hours
Oral diagnosis and treatment planning	105
Oral surgery, including ward rounds, medical histories	195
Restorative operative dentistry	120
Prosthodontia, including crown and bridge	120
Anesthesia:	
General:	
Inhalation	35
Intravenous	35
Regional, including spinal	35
Hematology, including venipuncture, blood counts, administration of blood substitutes, blood collecting	70
Periodontia	70
Endodontia	70
Roentgenography	35
Naval subjects	20
Total clinic hours	910

The six months of dental intern training at the naval hospitals is devoted to major clinical instruction (Table 2).

In addition, the dental intern attends tumor boards, medical conferences and autopsies.

Restorative operative dentistry and prosthodontia have been allotted only 120 hours each in the hospital phase of training. Emphasis during this time is on clinical experience, particularly in the subjects of oral diagnosis and treatment planning, oral surgery, anesthesia and hematology. Including ward rounds and taking medical histories, these subjects account for well over half of the total time spent at the hospital.

An analysis of the progress reports of the dental intern's hospital training indicates that his experience affords him opportunities for seeing and following, throughout his clinical progress, those conditions not usually seen in a clinic of a dental school and enlarges his knowledge of oral and systemic relations in health and disease.

In the hospitals and at the Naval Dental School, the dental intern training program is administered by a local dental intern training committee composed of the commanding officer or his representative, the chief of the dental service, the officer in charge of oral surgery and the officer in charge of prosthodontia. This committee organizes, plans and supervises the hospital phase of the program; informs the Dental Intern Training Board, established by the Bureau of Medicine and Surgery, of the progress of the dental interns at quarterly intervals; and advises the commanding officer of the hospital regarding the qualifications of civilian dentists for appointment on the civilian consultant-instructor staff of the hospital.

At the level of the Bureau of Medicine and Surgery, the Dental Intern Training Board includes representation from the Naval Dental School. This board reviews and passes upon the applications of candidates for dental intern training, checks

the progress reports of each dental intern at quarterly intervals during the year, and recommends the issuance of certificates to the successful dental interns. This board also reviews the dental intern training program from time to time and recommends changes considered desirable.

Thus, it can be seen that the Navy Dental Intern Training Program is not static. For instance, the Dental Intern Training Board recently, after a careful analysis of all the hospital reports, and a study of the training given at the Naval Dental School, recommended that certain didactic courses at the school not be duplicated at the hospitals. It also recommended that the work at the Naval Dental School be primarily directed toward didactic training and major clinical work in restorative operative dentistry and prosthodontia, whereas, the emphasis at the hospitals be directed toward major clinical work in the fields of oral diagnosis, oral surgery, anesthesia and hematology.

A permanent file for the Dental Intern Training Program is established at the Naval Dental School, and all correspondence relating to the progress of dental interns, including the individual progress reports, is kept here.

The first year of the operation of the Naval Dental Intern Training Program was completed in August of 1949. Seventeen dental officers received certificates of completion. The second group of dental interns consisted of 44 recent graduates. This program fully complies with the requirements for dental intern training as stipulated by the Council on Dental Education of the American Dental Association. The civilian consultant-instructors of the various naval hospitals participate in the program.

NAVY DENTAL RESIDENCY PROGRAM

Residency training is the logical extension of the dental intern training program in the educational demands of the dental profession.

There is need in the Navy for a limited number of dental officers qualified in the specialties of dentistry. They are required for teaching and for supervising the training of dental officers and enlisted dental technicians, for supplying well trained dental officers to the many ships and stations of the Navy and Marine Corps and for providing special dental care in hospitals and large dental clinics. The Dental Residency Program of the Navy has been organized with a view to obtaining recognition of this training by the various dental specialty boards, and for supplying the special needs of the Navy.

The first official action in the creation of the Navy Dental Residency Program was the establishment of the Dental Residency Board. This board makes recommendations to the chief of the Dental Division of the Bureau of Medicine and Surgery regarding all matters pertaining to this program. It has recommended that dental residencies be established as follows: One oral surgery residency at each of the following activities: U. S. Naval Hospital, Portsmouth, Va., U. S. Naval Hospital, St. Albans, N. Y. and U. S. Naval Hospital, San Diego, Calif. One prosthodontia residency at each of the following: U. S. Naval Dental Clinic, Brooklyn, N. Y. and U. S. Naval Dental Clinic, Naval Gun Factory, Washington, D. C. One pathology residency at each of the following: U. S. Naval Dental School, in conjunction with the U. S. Naval Medical School, National Naval Medical Center, Bethesda, Md. and U. S. Armed Forces Institute of Pathology, in conjunction with Georgetown University, Washington, D. C.: the dental resident to receive a Master of Science degree in pathology upon completion of the training.

This board has further recommended that the training be predominantly of a clinical nature and that full use be made of civilian consultant-instructors. Empha-

sis is to be given to investigative work, statistical analysis, seminars, demonstrations, lectures, basic sciences as they apply to the various specialties, and review of dental literature. It has been further recommended that the residency in prosthodontia include crown and bridge prosthesis, the design and construction of splints, obturators and all types of dental and maxillofacial appliances insofar as opportunity permits.

The dental residencies in prosthodontia are at activities other than naval hospitals. This is necessary because the dental prosthetic facilities of the Navy best suited for this training are not in the dental services of naval hospitals.

Most of the dental prosthetic restorations made in the Navy are for persons who are not hospital patients. They are made in large dental clinics commanded by dental officers. This is the reason for choosing the Naval Dental Clinic, Brooklyn and Naval Dental Clinic, Naval Gun Factory, Washington, D. C. There is always a large number of prosthodontic patients awaiting treatment at these dental commands.

From experience gained in the first year of the dental intern training program, it has been found that it is highly desirable that the staffs of the naval dental clinics be augmented by the appointment of civilian consultant-instructors who are diplomates of specialty boards or if these are not available, specialists of comparable ability.

The administration of this program will be similar to that for dental intern training. The training of the dental resident will be locally supervised by the dental officer who is in command or in charge of the dental activity, the supervising dental officer in the specialty concerned and the appropriate civilian consultant-instructor.

At the level of the Dental Division of the Bureau of Medicine and Surgery, the dental residency program will be supervised by the Dental Residency Board in a manner very similar to that for the dental intern training program. The individual reports for dental residents will be kept in a permanent file at the U. S. Naval Dental School.

The U. S. Naval Dental Corps is vitally interested in the dental intern and dental residency training programs for two reasons: First, it desires to maintain its present high standard of dental service for the U. S. Navy and Marine Corps, and secondly, it wishes to cooperate with the plans of the American Dental Association for the future of dentistry.

Intelligence • Whoever has read the best books has acquired not only information but a method of thinking. Intelligence is as contagious as gracefulness and wit used to be in the eighteenth century. This is not all. Doctrines are tested and developed, methods are improved, views are completed, the work of the whole world becomes the property of each individual seeker who cares to annex its results. *Ernest Dimnet, The Art of Thinking.*

Department of dentistry in a large hospital properly organized for dental internship training and dental residency training

Frank J. Houghton, D.D.S., Jersey City, N. J.

When the dental intern appeared on the hospital horizon no one knew where he should be placed, or what program should be outlined for him, and the dental profession was not in a position to know exactly what the intern should do other than the dental clinic routine. Too often, in many hospitals, a dental intern was left on his own. This necessarily defeated the purpose of the intern training. Many agencies outside of dentistry tried to solve the problem, with the result that there were many types of dental internships being offered, some good and some bad.

In 1944 the American Dental Association appointed a committee to draw up requirements for departments of dentistry in hospitals. This was accomplished with the cooperation of the Committee on Hospital Dental Service of the American Dental Association, with the aid of a committee from the American Hospital Association. The requirements thus established were submitted to the Board of Trustees, who recommended them for approval to the House of Delegates. The House of Delegates approved the requirements as set up by the Committee on Hospital Dental Service of American Dental Association. The requirements were also approved by the Board of Trustees of the American Hospital Association.

The Council on Dental Education then proceeded to set up a training program for dental internships and dental residencies[1] on the basis of the requirements as approved by the American Dental Association for departments of dentistry in hospitals. A hospital must first be approved by the Council on Hospital Dental Service before its internship training program and residency training program can be approved by the Council on Dental Education. One should first familiarize himself with the requirements of both these Councils before developing a training program for dental interns or dental residents.

When these requirements are understood, a definite program should be outlined and the matter taken up with the proper authority in the hospital so that there will be a clear understanding as to where the scope of dentistry starts and ends in a given institution. Once a program is outlined and approved, it should be carried out in full conformity with the rules and requirements as set up. It is then the duty of the dental director to see

Presented before the Section on Hospital Dental Service, ninetieth annual session of the American Dental Association, San Francisco, October 18, 1949.

Formerly dental director, Jersey City Medical Center, Jersey City, N. J. Now dean of Loyola University School of Dentistry, New Orleans.

1. Council on Dental Education, Requirements for the approval of hospital internships and residencies. J.A.D.A. 33:508 (April 1) 1946.

that he surrounds himself with proper personnel to head the various subdivisions of the dental department. Where possible, it is good practice to take a man who specializes in each particular branch of dentistry to be chief of such division. It is a requirement in some hospitals that a man, in order to be chief of a division, must have passed his board in his respective specialty. There are many training programs in operation at the present time. The following program has been in operation for the past 20 years, with improvements from time to time.

JERSEY CITY MEDICAL CENTER DENTAL TRAINING PROGRAMS

The Jersey City Medical Center consists of the Jersey City Hospital, the Margaret Hague Maternity Hospital, the B. S. Pollak Hospital for Chest Diseases, the Hudson County Hospital for Chronic Diseases, the Hudson County Mental Disease Hospital and the Jersey City Hospital for Communicable Diseases. The dental intern program is carried out in all these institutions.

All the city dental services are administered by the Department of Dentistry of the Jersey City Medical Center. This department serves the Board of Education which is responsible for the dental needs of the children of the public schools, and the Board of Health which is responsible for the dental needs of the children of the parochial schools. Dental examination is carried on in the Jersey City schools by a dentist of the Department of Dentistry who, upon completion of the examination, gives his findings to the school nurse who, in turn, notifies the child's parents of the need of dental care and suggests that the child be taken to the family dentist.

If it is found through investigation that a child cannot afford the services of private practice, the child is cared for in the clinic. The children, accompanied by matrons, are transported to the hospital by special bus. This brings approximately 160 children a day to the dental clinic at scheduled times.

During the summer months children are assigned to the dental clinic by a definite appointment and, on the prescribed days, the school matron meets the children who are listed for these appointments at the neighborhood playgrounds and accompanies them to the hospital dental clinic.

In addition to this service, a clinic for adult outpatients is maintained at the Jersey City Medical Center. Emergency treatment, relief of pain, treatment of diseases of the mouth, fractures and new growths are cared for in the adult clinic.

The Department of Dentistry has the right of consultation with all services at the Jersey City Medical Center and may admit dental patients directly to the hospital for care.

An intern of the dental department at the Margaret Hague Maternity Hospital examines the expectant mother at the sixth month of pregnancy. She is advised of the importance of a healthy mouth and is given an appointment to have the necessary dental treatment instituted. The Department of Dentistry does examination, prophylaxis, fillings, periodontal treatment and extraction of infected teeth.

At the B. S. Pollak Hospital for Chest Diseases a complete dental service is rendered, as the stay of these patients is of long duration.

At the Hudson County General Hospital, which includes the Old Age Hospital, in addition to the chronic illnesses that are cared for, a complete dental service is rendered.

At the Hudson County Mental Disease Hospital a complete dental service is carried out.

At the Jersey City Hospital for Communicable Diseases, Vincent's stomatitis and other communicable diseases of the oral cavity are treated. In addition, den-

tal consultations are held regarding all allied conditions and treatment instituted.

The Jersey City Medical Center has 2,500 beds as well as the outpatient department. In addition to the children from the two services mentioned, about 10,000 adults are registered annually in the outpatient department of the Department of Dentistry. (This figure is on the basis of patient visits.)

DENTAL INTERN TRAINING PROGRAM

A young man serving his dental internship at this institution is assigned to every service of the dental department. The men are rotated every two weeks. The schedule of training during the internship, mixed type, consisting of 50 weeks of training and 2 weeks' vacation, follows:

Four Weeks Diagnostic Service

1. Examines all patients admitted to the hospital, or registered as clinic patients on the dental service.
2. Charts the condition of the mouth, recording all the findings.
3. History taking.
4. Makes a provisional diagnosis.
5. Plans treatment and orders necessary laboratory tests.
6. Arranges for consultations with other divisions in the hospital, when needed.
7. Writes orders in the order book for treatment to be carried out by the nurse in charge of the ward in the interest of the patient.
8. Properly fills out the patient's hospital chart, or card in the dental clinic.
9. Ward rounds, morning and night.
10. Answers all emergency calls after clinic hours.

Six Weeks Pedodontia

1. Prophylaxis.
2. Diagnosis.
3. Treatment and planning.
4. Fillings (restorative dentistry).

Eight Weeks Oral Surgery and Extractions

(Adults and children)

1. Diagnosis.
2. Treatment planning.
3. Treatment.
4. Extraction of teeth.
5. Root amputation.
6. Tooth exposure of unerupted permanent teeth.
7. Removal of impacted teeth.
8. Removal of cysts.
9. Frenectomy.
10. Removal of torus palatinus.
11. Reduction of jaw fractures.
12. Wiring or placing of splints in position for stabilizing fracture.
13. Treatment of osteomyelitis of jaws.
14. Biopsy of all suspicious growths in the mouth.
15. Smear of lesions in the mouth.
16. Alveolectomy.
17. Muscle placement.
18. Cellulitis, Vincent's angina, vitamin deficiency stomatitis.

Four Weeks Prosthetic Dentistry

1. Diagnosis.
2. Case planning.
3. Full upper and lower denture construction.
4. Partial denture construction.
5. Fixed bridges.
6. Appliances for mouth deformities due to cleft palates, and mouth deformities due to general surgery.

Four Weeks Periodontia and Operating Dentistry for Adults

(Special care given to expectant mothers)

1. Prophylaxis.
2. Diagnosis.
3. Treatment planning.
4. Treatment and fillings.

Four Weeks Orthodontia

1. Diagnosis.
2. Plans proper treatment.

Four Weeks Radiology (X-ray)

1. Takes all roentgenograms, including approval of routine roentgenographic examinations requested by other divisions in the hospital.
2. Develops pictures.
3. Mounts pictures.
4. Records and reads findings from roentgenograms.
5. Types of films
   - A. Intraoral.
   - B. Lateral jaw.
   - C. Bitewing.
   - D. Anteroposterior.
   - E. Occlusal.
   - F. Condyle.

Four Weeks Pathology and Bacteriology

1. Attends autopsies.
2. Weekly conference at which dental slides are examined.
3. Blood count.
4. Blood chemistry.
5. Makes slides of dental diseases.
6. Patho-slides.

Eight Weeks Anesthesiology

1. Basic fundamentals of anesthesia.
2. Systemic signs and actions.
3. Observation.
4. Actual giving of anesthesia of all types.

Four Weeks Ambulance Duty

Oral surgery conferences are held bimonthly.

Monthly staff meetings are held, at which time the interns present current cases which have cleared through the Department of Dentistry.

The dental intern is also invited to the general staff meetings once a month.

The dental intern makes morning and evening rounds with the dental resident and examines all cases on the dental service. The dental intern is assigned to make grand rounds at 7 P.M. with the chief medical residents, sees all medical cases admitted to the hospital during that day, makes a complete clinical dental examination on all patients on this service, records his findings on the patient's chart, recommends roentgenographic studies and such other clinical aids as may be needed to complete a proper diagnosis.

Medical conferences of the various divisions of the hospital are held daily and the dental intern is privileged to attend these conferences in his free time.

The dental intern writes all histories of cases admitted to the dental department and arranges for consultation with other services in the hospital when this is necessary.

The dental intern receives definite training from the Department of Anesthesiology and from the Department of Pathology and Bacteriology. He is assigned to the department chief of these two departments and is part of their program for the time assigned.

The dental intern is assigned to the emergency room, because a 24 hour service prevails at this institution. He examines and admits all dental cases that are cleared through the emergency room.

In addition to this, the dental intern rides the ambulance. Before being assigned to the ambulance he is briefed by the chief medical resident as to the proper use of the stethoscope so that he may recognize the normal from the abnormal and is given instructions on systemic signs to help him determine whether or not he is to bring the patient to the hospital. This is done to train him to be observant so that in the future, in his own office, such knowledge and experience may help him avoid difficulties with patients that may come under his care.

A Dental Intern Certificate is granted to the dental intern upon completion of his training.

Applications for dental residencies are considered after the completion of one year of dental intern training.

DENTAL RESIDENT TRAINING PROGRAM

As the Council on Dental Education set up requirements for the training of dental interns, they also set up requirements for the training of dental residents,[2] and the American Board of Oral Surgery is working in cooperation with the Council on Dental Education at the present time to formulate definite requirements for the training of oral surgeons.

The training for dental oral surgery residency at the Jersey City Medical Center consists of 27 months of training which includes 9 months in basic sciences and 18 months in practical training.

Nine Months Basic Science Training

I First 6 months:

A. Two weeks study of hematology includes:
   1. Complete blood count.
   2. Bleeding time.
   3. Coagulation time.
   4. Microscopic study of the blood picture of the various diseases affecting the vascular system.
   5. Clinical demonstration of oral lesions in blood dyscrasias.

B. Four weeks study of biological chemistry. The course of study includes the 12 recognized blood tests. Lectures are given on the theory of making solutions. The resident is given the opportunity to make solutions of varying dilutions. He is also instructed in the use of the magnetic analytical balance and other balances of less complex types.

2. Council on Dental Education, Requirements for the approval of hospital internships and residencies. J.A.D.A. 33:510 (April 1) 1946.

C. Two weeks are spent in the clinical microscopy department. The material covered includes:
   1. All tests on spinal fluid.
   2. All tests on feces.
   3. All tests for gastric analysis.
   4. All tests on urine.

D. Three weeks are spent in the bacteriology laboratory. The course covers all phases of bacteriology with emphasis on the oral flora.

E. One week is spent studying seriology. The scope of material covered includes tests for syphilis, febrile agglutinations and liver function tests.

F. Three months are spent on the pathology service. Material covers:
   1. Autopsies (about 125).
   2. Slide conferences.
   3. Methods and technics of preparing tissue slides and pathologic specimens.
   4. Methods of taking a biopsy.
   5. Tumors of the oral cavity.
   6. General anatomy (microscopic and gross).
   7. Head and neck anatomy (lecture and actual dissection).
   8. Embryology (assigned reading).
   9. Histology (assigned reading).

In addition to the courses outlined above, the resident is also responsible for:

1. Attendance at medical lectures given daily. These lectures are presented by members of the attending staff as well as guest lecturers.
2. Attending weekly hospital hematology conference.
3. Attending the weekly hospital death conference.
4. Attending the weekly conference on hospital clinical pathology.
5. Attending hematology clinic to see oral manifestations of dyscrasias.
6. Making the evening ward rounds of the medical and dental staffs.
7. Attending all courses given by the hospital postgraduate committee; usually three one hour lectures per week.
8. Assisting in medical emergency room on dental cases.
9. Assisting chief of oral surgery staff in dental clinic.

II Remaining three months—anesthesia

The resident spends the remaining three months of his basic training in the anesthesia department. The course follows the recommendations of a curriculum in anesthesiology given by the committee on postgraduate education, American Society of Anesthesiologists. The plan of instruction includes:

1. Minimum of 15 lectures or group discussion on basic anatomy, physiology, pharmacology, physics, and chemistry as applied to anesthesia. These lectures are presented by the director of anesthesia, his assistant or others assigned by him.
2. Minimum of 15 demonstrations supplementing the lectures. These may consist of slides, films, or clinical demonstrations.
3. Weekly seminars or conferences for discussion of interesting cases and current literature.
4. Supervision of anesthetic management of all cases.

Schedule for Oral Surgery Course

Eighteen months are spent by the resident in practical operations and demonstrations of oral surgery. The course is as follows:

1. Acts as first assistant on all cases handled by members of the oral surgery staff.
2. Examines and makes provisional diagnosis of all patients admitted to the oral surgery service, and all clinic patients requiring oral surgery.
3. Spends two mornings per week in the tumor clinic; works with the cancer department in the operating room on all cases involving the head and neck.
4. Assists and works with ear, nose, and throat department on all cases involving dental structures.
5. Supervises the work of the interns in the oral surgery clinic and is responsible for a minimum of one lecture per week to them.
6. Prepares all general anesthesia cases for the dental department.
7. Works with the various other departments on all cases requiring dental consultations.
8. Works with the chief of the departments of orthodontia, periodontia, prosthodontia, and operative dentistry on all cases requiring oral surgery.
9. Attends the maxillofacial clinic which is held every two weeks, and accepts such assignments as planned for him.
10. Is responsible for the treatment of head and neck lacerations that come into the emergency room.
11. Spends a minimum of 27 hours per week in the oral surgery clinic.

Course in Dental Roentgenology • The course in dental roentgenology is based on the following:

1. The roentgen ray tube and how it works.
2. Operation of X-ray machine and precautions to be observed.
   A. Position of film.
   B. Angulation of tube.
   C. Time of exposure.
   D. Danger of overexposure.
   E. Harmful effects.
   F. Means of detecting.
   G. Treatment.
3. Intraoral roentgenography.
   A. Bitewing films.
   B. Occlusal films.
4. Extraoral roentgenography.
   A. Temporomandibular articulation.
   B. Lateral views of mandible from cuspid to ascending ramus.
   C. Profile roentgenography.
   D. Intensifying screens.
   E. Cassettes and their care.
5. Identification of roentgenograms. Mounting and viewing films.
6. Materials used and their care.
7. Dark room technic and maintenance of same.
8. Identification of technical errors.
   A. Improper angulation.
   B. Faulty processing.
   C. Slipshod darkroom technic.
9. Faulty roentgenograms and how to avoid them.

This program, which has been tested at the Jersey City Medical Center, is practical in its application and possible to inaugurate in large or small hospitals in accordance with the facilities.

If dentistry is to take its place in the scheme of health service and in advancing the education of its members, every effort must be exerted to make available, with the ever increasing facilities, more training in hospital procedures and advanced specialty training.

Two-year caries control study utilizing oral hygiene and an ammoniated dentifrice

Douglas W. Kerr, D.D.S., and Robert G. Kesel,† M.S., D.D.S., Chicago*

Considerable interest in ammoniated dentifrices has arisen in recent years, largely because preliminary laboratory and clinical tests conducted at the University of Illinois have indicated that caries activity can be reduced by the consistent use of a dentifrice and mouth rinse containing dibasic ammonium phosphate and urea.[1,2] Although the results were encouraging, further study was necessary for several reasons: (1) Difficulty was encountered in holding the interest of the subjects over a two-year period. (2) The individuals who remained under observation for two years were those who had had considerable

* Research assistant professor of applied materia medica and therapeutics, University of Illinois, College of Dentistry, Chicago.

† Professor of applied materia medica and therapeutics, and head of the department, University of Illinois, College of Dentistry, Chicago.

1. Kesel, R. G.; O'Donnell, J. F.; Kirch, E. R., and Wach, E. C., Ammonia production in oral cavity and use of ammonium salts for control of dental caries. Am. J. Orthodontics (Oral Surg. Sect.) 33:80 (Feb.) 1947.

2. Kesel, R. G., Effectiveness of dentifrices, mouthwashes, and ammonia-urea compounds in control of dental caries. J. D. Res. 27:44 (April) 1948.

caries experience, and as a result had few areas vulnerable to decay. (3) These individuals were concerned about their caries activity, and therefore did a conscientious job of toothbrushing and mouth rinsing and there was no adequate control group that brushed and rinsed comparably with nonammoniated material. It was therefore impossible to determine how much credit belonged to the brushing and how much to the ammoniated dentifrice or rinse.

A review of the literature had revealed no controlled tests to determine the actual value of oral hygiene.[3] A two-year study involving more than 1,700 grade school children was set up to learn more about toothbrushing and about brushing with the ammonia-urea combination which the preliminary tests had found to be so effective. The scope of the study, so far as can be determined, is the most extensive of its kind ever conducted.

THE PROJECT

For brushing the teeth in the classroom, the city of Aurora was selected largely because of the acquaintance one of us had with school authorities there.

The study was outlined to the superintendent of schools, to several school principals and to the board of education. Permission was granted, provided the teachers were willing to do the extra work. The teachers examined the detailed program critically—considering the possible untidiness that might result in the schoolroom and the time that would be taken from regular schoolwork—and, after some discussion, pledged their support. However, Aurora could not provide sufficient children for the scope of the study and the drinking water there contained more than one part per million of fluorine which made it desirable to seek another area with a larger population and a nonprotective water supply to augment the study. Encouraged and fortified by the acceptance of the project by the teachers in Aurora, the school authorities in Peoria were approached. Peoria was considered because it is the largest city in Illinois next to Chicago, because of its progressive school dental health program, and because of the interest expressed by members of the Peoria Dental Society. The board of education and the teachers gave approval, and in both cities we have received complete and, in most cases, enthusiastic cooperation.

In setting up the project to make comparisons in therapeutic action, recognition was given to uniformity of brushing procedure and age range—the latter to avoid such complications as difference in dentitions, variation in comprehension and other factors. Children in the 10 and 11 year age group were selected for two reasons. They would have two more years in the grade schools and the tests could be conducted in uniform fashion over that entire period. The tests could be conducted on a group generally known to be highly susceptible to caries. If the study in this group showed the value of oral hygiene or the use of an ammoniated dentifrice, or both, it could be concluded that the results would be at least as significant in older age groups and probably more significant.

The teeth were brushed at 9:00 A.M. and 1:00 P.M. because this was the closest possible school time for brushing after the intake of food. The brushing was done under close supervision at these times each school day, and the children were urged to brush their teeth in the same way after the evening meal and before retiring.

THE FOUR GROUPS

The study began with 288 children in Aurora and 1,428 in Peoria. They were

3. Hine, M. K., Prophylaxis, toothbrushing, and home care of mouth as caries control measures. J. D. Res. 27:223 (April) 1948.

divided into four groups, three of which used a different dentifrice. Tooth powder A contained no ammonia or urea; powder B contained 5 per cent dibasic ammonium phosphate and 3 per cent urea but no bentonite; powder C contained 5 per cent dibasic ammonium phosphate and 3 per cent urea and 5 per cent bentonite. The bentonite, a colloidal clay, was included because of its adhesiveness and its detergent properties. The complete formulas follow:

Tooth Powder A (to make 10 Kg.)	Gm. or cc.
Soluble saccharin	20
Menthol	20
Calcium carbonate precipitate	9,960
Oil of peppermint, pure	20
Oil of wintergreen, pure	60
Oil of cinnamon, pure	19
Sodium lauryl sulfate	100
Tooth Powder B (to make 10 Kg.)	
Dibasic ammonium phosphate, U.S.P.	500
Urea, U.S.P.	300
Soluble saccharin	20
Menthol	20
Calcium carbonate precipitate	9,160
Oil of peppermint, pure	20
Oil of wintergreen, pure	60
Oil of cinnamon, pure	19
Sodium lauryl sulfate	100
Tooth Powder C (to make 10 Kg.)	
Dibasic ammonium phosphate, U.S.P.	500
Urea, U.S.P.	300
Bentonite, U.S.P.	500
Soluble saccharin	20
Menthol	20
Calcium carbonate precipitate	8,660
Oil of peppermint, pure	20
Oil of wintergreen, pure	60
Oil of cinnamon, pure	19
Sodium lauryl sulfate	100

The children in the fourth group, which served as a control, did not brush their teeth at school. They were left to follow their customary oral hygiene habits.

As nearly as possible, and in careful consultation with the school authorities in both cities, the children were grouped so that each group crossed the lines of high, middle and low financial areas.

EARLY STUDIES

Others have advocated formulas containing more urea and concentrations varying from 13.5 to 40 per cent currently are in use. It has been recognized for many years that urea in high concentrations is a bacterial and enzyme inhibitor, and that its action is not limited to specific or harmful bacteria.

As early as 1906, W. J. Wilson[4] reported that urea in culture medium inhibited the growth of such organisms as *Bacterium coli, Bacterium typhosum* and *Bacterium enteritidis.* If the medium contained 0.5, 1, 2 or 3 per cent urea, *Bacterium coli* was as active as it was in medium containing no urea. At 4 and 5 per cent concentrations a fair growth was obtained, at 7 per cent there was little growth and at 8 per cent none. Wilson reported that in bouillon medium the percentage necessary to inhibit growth appeared to be even less.

A major purpose in the use of an ammoniated dentifrice according to our concept is to reduce fermentation without interfering with proteolytic activity and natural ammonia production. In other words, the aim is to stimulate and fortify a natural protective mechanism against caries that is depressed in the majority of mouths by high sugar consumption. Our early studies showed that ammonia is produced more rapidly in the saliva of individuals resistant to caries from the deamination of amino acids derived from protein metabolism.[5] Since high urea concentrations interfere with proteolysis as well as fermentation, we decided to use the lowest possible effective concentration.

In vitro tests had shown that the 5:3 ratio of dibasic ammonium phosphate

4. Wilson, W. J., Pleomorphism as exhibited by bacteria grown on media containing urea. J. Path. & Bact. 11:394, 1906.

5. Kesel, R. G.; Kirch, E. R.; O'Donnell, J. F., and Wach, E. C., Recent developments in the biologic production of ammonia and the use of ammonia and carbamide in caries prevention. Oral Surg., Oral Med. & Oral Path. 2:459 (April) 1949.

and urea produced the greatest synergistic action in the prevention of glucose fermentation by various enzyme systems as well as the inhibition of lactobacilli.

Urea concentrations which are greater than 5 per cent in human saliva show an increasing inhibition of the ammonia-producing mechanism. At concentrations of 10 per cent or more, these proteolytic systems are so inhibited that they no longer function as deaminators of amino acids even when additional buffered amino acids are added to the saliva. This inhibition was determined in *in vitro* experiments by nitrogen analyses made before and after incubation for 72 hours.

High concentrations of urea increase the danger of irritating the oral mucosa. Several individuals complained of soft tissue irritation following the use of an ammoniated dentifrice. The type used usually contained a higher concentration of urea than the 3 per cent we have advocated. None of the children in our study complained of or showed any evidence of soft tissue irritation although periodic inspections were made to detect any such reactions. Some individuals undoubtedly will be allergic to one or another ingredient in the dentifrice. The disappearance of such symptoms when use of the dentifrice is discontinued and reappearance when the dentifrice is used again, would indicate an allergy, and use of the formula should be discontinued. We believe that less trouble with the soft tissues of the oral cavity will be encountered from preparations containing a low urea concentration.

We have consistently maintained a level of 5 per cent dibasic ammonium phosphate and 3 per cent urea in our dentifrice formulas. It can be readily understood that analyses of expectorated saliva made at intervals following the use of such a dentifrice may show a rapid dilution or reduction of these agents. These analyses reveal the amount present in the free saliva and are not an indication of what has been absorbed into, and remains active in, the bacterial plaques on the tooth surface. It is in these so-called regions of stagnation, more or less inaccessible, that decay takes place. If the dibasic ammonium phosphate and urea are worked into these regions they may remain for long periods without salivary dilution.

A few articles in recent literature have indicated that the investigators could not obtain inhibition of lactobacilli with the ammonium ion. One study appears to have been meticulously done and the results of the *in vitro* experiments do not coincide with our previous reports regarding the inhibition of lactobacilli by placing ammonium carbonate in the culture medium.[6] These studies, however, did not duplicate our procedures in several important aspects.

The inoculum used by Kirchheimer and Douglas was 0.1 ml. of a 24 hour culture of the test organism. As reported, our studies were done with 0.1 ml. of a 1:100 dilution of a 24 hour culture. Hence, an inoculum containing a hundred times as many organisms was used by them. In testing the effectiveness of an antibacterial agent, the amount of inoculum is an important consideration.

Our studies of the possible inhibitory effectiveness of ammonia were based on observations of the ammonia content in stagnating saliva. These ammonia levels were determined by measuring the ammonia nitrogen content, not the ammonium salt content. Consequently, our testing of the effectiveness of various ammonium salts was based on the amount of nitrogen the salt gave up to the testing medium and not on the amount of the ammonium salt. For instance, anhydrous ammonium carbonate contains 29.15 per cent by weight of nitrogen; therefore, 1.0 mg. of this ammonium carbonate would provide only

6. Kirchheimer, W. F., and Douglas, H. C., The failure of ammonium ions to inhibit the growth of oral lactobacilli. J. D. Res. 29:320 (June) 1950.

29.15 per cent of the ammonia nitrogen we recommended.

We are not surprised at the failure of the other study to get inhibition because of the heavy inoculum and the reduced ammonia nitrogen. These investigations have not demonstrated that ammonia will not inhibit various strains of oral lactobacilli under conditions comparable to those we used.

An interesting report has appeared on the ingestion of dibasic ammonium phosphate and urea in the ratio used in the dentifrice in a caries-producing diet fed to hamsters.[7] These animals were fed the diet for 100 days after weaning and a considerable inhibition of caries was reported for those ingesting the dibasic ammonium phosphate and urea.

PROCEDURE

All the children in our study were given the same instructions concerning toothbrushing. The teachers, previously instructed, directed the brushing. Brushing began in the same part of the mouth in all cases, and using a small, gentle, circular stroke, the pupils brushed the buccal, labial and lingual surfaces. A short vertical stroke was used to brush the lingual surface of the lower anterior teeth. The bristles were placed vertically against the occlusal surfaces and worked into the pits and grooves with a tiny rotary motion. The actual brushing required two minutes.

Before brushing, each pupil was given a paper towel to put over his desk, a paper cup containing his allotment of dentifrice, and another containing water. The dentifrice was poured from its cup to the towel and the brush dipped into it to get as much of it as possible on the brush. The children expectorated into the empty dentifrice cups. Brushes were rinsed in the cup of water and dried by tapping them first on the cup, then on the towel covered desk. Cups and towels were deposited in pails and removed by janitors and burned.

Brushes were junior size, with three rows of tufts, six tufts per row. The tufts were graduated in length, with the longest at the toe end of the brush. Each child was provided with two brushes for school use and two for home. Brushes were replaced when necessary.

Salivary lactobacilli counts were obtained from the children at the beginning of the study. Each child was supplied a bottle and paraffin and was instructed to collect a prebreakfast specimen. The latter was cultured and recorded by the bacteriologic laboratories of the Illinois State Health Department. An attempt was made to obtain specimens about once every two or three months. It became apparent that large reductions in lactobacilli were not being obtained in many instances. While this caused concern, it was decided to follow through with the originally planned program rather than begin the use of the mouth rinse, or otherwise alter the procedures, in attempts to reduce the lactobacillus counts.

When the refined carbohydrate consumption remains high and caries is still active, the lactobacillus counts may remain positive despite a reduction in the number of lesions, both etchings and cavities, that develop during a period of study. Unless caries activity is completely checked, completely negative lactobacillus counts should not be expected. This opinion is a possible explanation of why this study and the one on penicillin dentifrice,[8] recently reported, indicate a clinical reduction in caries activity without striking drops in lactobacillus counts.

No instruction was given as to diet; the children were left to continue what was known to be a high consumption of refined carbohydrates. Dentists in the two

7. Chernausek, D. S., and Mitchell, D. F., Ammoniated dentifrices and hamster caries: the effect of ingestion, Science 112:273 (Sept. 8) 1950.

8. Fitzgerald, R. J.; Zander, H. A., and Jordan, H. V., The effects of a penicillin dentifrice on oral lactobacilli, J.A.D.A. 41:62 (July) 1950.

areas were requested not to give prophylaxis or topical fluoride treatment to those in the study.

As might have been expected, there were decreases in the number of children in each test group, chiefly because families moved from one school district to another where a different dentifrice was being used. All of the children in the East Aurora schools were shifted to a junior high school, where it was impossible to supervise toothbrushing. Ultimately the program lost 644 children in Peoria and 142 in Aurora. Because of the mass loss in Aurora compared to the 288 in the starting group, and because the one part per million of fluoride in drinking water made conditions not comparable to Peoria, this report is confined only to Peoria children.

THE EXAMINATIONS

The collection and interpretation of data from the study were organized in such a way that those directly interested would not be able to influence the results. Examinations of the children at the start of the study were made by two dentists from the Bureau of Dental Health of the Illinois State Health Department who were disinterested persons, and one of them made all the examinations at the end of the two-year period. Procedures followed were those generally used by the Bureau of Dental Health and the U. S. Public Health Service. Examinations were made with mouth mirrors and sharp explorers. A refinement in the technic was the use of compressed air to dry the tooth surfaces. Special forms were provided for charting the mouths.

The same standards of examination were employed at the close of the study as at the beginning. Immediately before each examination, the children were given prophylaxis by senior students in dental hygiene from Northwestern University School of Dentistry.

The Bureau of Dental Health also provided roentgenographic examinations for all the children and while they were not available to assist the examiner at the time of examination, they helped in appraisal of the clinical examinations.

The Bureau of Dental Health dentists who compiled the appraisal of data did not know which group followed which procedure, the various analyses being identified by code letter only. Not long after the final examinations were finished, John Chrietzberg, head of the Bureau of Dental Health of the Illinois State Health Department, Orvis Hoag who had made the examinations, and two statisticians—one from the health department and the other from the University of Illinois—met with us and received a preliminary tabulation of the data, which still remained identified only by code. Then the code letters were disclosed and the group had its first knowledge of the results.

Errors that the use of roentgenograms would avoid inevitably occur in a purely clinical examination. Cavities already detectable by roentgenograms in 1948 could be missed on clinical examination and not scored until 1950, and those very early lesions present in 1950 would likewise be missed in clinical examination only. This fact, along with questions about unerupted teeth and other factors, led to a decision to review the clinical examinations and supplement them with the roentgenograms that were taken at approximately the same time. Two dentists who had had experience in scoring roentgenograms with a clinical study and who were acceptable to both the University and the Bureau of Dental Health were engaged to make this appraisal. The grouping of the children was completely unknown to them. They used the clinical examinations provided by the State Health Department and examined the roentgenograms under special illumination but without magnification. The number of children in their appraisal is further reduced because of

the poor quality of some of the roentgenograms. The group using Dentifrice C became so small that its results were not considered reliable, and it was not considered in the roentgenographic appraisal. The results of these first surveys are given in Tables 1 and 2.

THE RESULTS

The results given in the tables were expressed according to the method employed by Knutson in his fluorine studies and used by Zander and Fosdick to evaluate their oral hygiene investigations. The calculated reduction in caries developed during the two-year period studied was obtained by comparing the number of teeth per hundred attacked in the control group with the number attacked in the experimental groups. The difference between the latter number and the former, expressed in percentage of the former, gave the determined reduction in caries due to difference in the measures employed.

The clinical examinations reveal that brushing with a nonammoniated dentifrice was 6 per cent more effective than the practice followed by the control group, and that brushing with an ammoniated dentifrice containing 5 per cent diammonium phosphate and 3 per cent urea with no bentonite was 16.7 per cent more effective than the control group procedure.

The system of clinical examinations plus use of roentgenograms shows 9.3 per cent reduction for the nonammoniated dentifrice, and a 20.5 per cent for the ammoniated dentifrice without bentonite.

The survey based on clinical examination only was made on the children who had remained in the same school for the two-year period. It was subsequently found that some children, not included in the first survey, had moved from one school to another in which the same type of dentifrice was used. This permitted them to be included in the study. However, they were not added to the clinical survey because by this time their classification was known to the appraisers. They were included in the roentgenographic appraisal because their identity was unknown to these different examiners. That is why there are 11 more children in the group using dentifrice A in the roentgenographic survey.

DISCUSSION

The study was designed to test oral hygiene and ammoniated dentifrices

Table 1 • Clinical survey

Group	Number of children	Unattacked permanent teeth, 1948	Number of teeth attacked 1948-1950	Average number of teeth per hundred attacked	Difference in number of teeth per hundred attacked	Percentage of reduction in teeth attacked
Control (no brushing in school)	301	4,725	399	8.4	—	—
Dentifrice A (nonammoniated)	160	2,707	214	7.9	0.5	6.0
Dentifrice B (ammoniated, without bentonite)	179	2,908	205	7.0	1.4	16.7
Dentifrice C (ammoniated, with bentonite)	144	2,371	181	7.6	0.8	9.6

Table 2 • Clinical plus roentgenographic survey

Group	Number of children	Unattacked permanent teeth, 1948	Number of teeth attacked 1948-1950	Average number of teeth per hundred attacked	Difference in number of teeth per hundred attacked	Percentage of reduction in teeth attacked
Control (no brushing in school)	251	3,843	492	12.80	—	—
Dentifrice A (nonammoniated)	171	2,614	304	11.62	1.18	9.3
Dentifrice B (ammoniated, without bentonite)	170	2,494	254	10.18	2.62	20.5

under severe conditions of use. The age selected (10 to 11 years at the start of the study) is one of high susceptibility to caries.

Both psychological and physical factors hamper a project of this type. Youngsters of the age selected are prone to forget; the attempt is made to secure from the child cooperation in maintaining teeth, which are adult structures as yet unappreciated by the child. During this period of life, too, the oral hygiene methods are applied to adult structures in a juvenile environment which restricts accessibility to mechanical cleansing.

It is impossible to know how well the children carried out their instructions for home brushing. While many were conscientious, many more probably failed to practice the prescribed routine on off-school days. For three months during the summer there was no supervision but each child was supplied enough dentifrice during the last week of school to provide him for the summer months.

In the heavy academic program of both teachers and pupils, constant surveillance is required to maintain the proper discipline and the high morale that would ensure continued attention to the required details of the program.

Another hazard to a hygiene program at this age is the changing dentition and the tenderness present in the areas of exfoliating teeth. Children are likely to avoid brushing in these tender areas.

An unexpected interference that developed during the program was the widespread advertising of ammoniated dentifrices and brushing immediately after meals. A questionnaire sent to the control group revealed that 105 out of 301 used ammoniated dentifrice at some stage of the study. It is not possible to know what effect this fact may have had on the controls, but it should be pointed out that any possible beneficial effect they received from their home use of ammoniated dentifrices reduced their caries experience. Furthermore, the controls might have had more caries, thus creating a greater difference between the experimental and control groups.

Considerable interest in toothbrushing programs in schools has been aroused in a number of Illinois communities. This study, as some teachers have stated, has translated a health program into action. The response from the teachers and pupils already has encouraged the development of several independent schoolroom activities. One conducted by the Bureau of Dental Health and soon to be reported has shown that sodium fluoride solution applied topically to teeth brushed routinely in the classroom for a two-week period showed as much benefit as was observed in those cleaned by a hygienist before topical application. We hope to see continued interest in oral hygiene pro-

grams on the part of school authorities, parents and pupils.

CONCLUSIONS

Our original studies were conducted on adults who brushed their teeth immediately after eating and who supplemented the dentifrice with an ammoniated mouth rinse. Further investigation would be desirable to determine whether the trends noted in this study become more significant under different conditions governing use of the dentifrice, and with more exact methods for measuring caries activity than are now generally employed.

The results of this study show a trend which indicates the usefulness both of good oral hygiene and of ammoniated dentifrices.

Newburgh-Kingston caries fluorine study III. Further analysis of dental findings including the permanent and deciduous dentitions after four years of water fluoridation

David B. Ast, D.D.S., M.P.H.; Sidney B. Finn,† D.M.D., M.S., and Helen C. Chase,‡ A.B., Albany, N. Y.*

In October 1949 the first two progress reports on the Newburgh-Kingston Caries Fluorine Study, which began in 1944, were presented before the American Public Health Association.[1,2] In these reports an analysis was made of the initial DMF rates of 6 to 12 year old children in Newburgh and Kingston and the DMF rates for three years following the introduction of sodium fluoride into Newburgh's communal water supply. In addition, data on the physical examinations, laboratory tests and roentgenographic examinations of the hands, forearms and tibias of approximately 500 children in each city were presented.

In regard to the medical aspects of the study, the results thus far disclosed no deleterious systemic effects from the ingestion of fluoride in drinking water in the dosage employed (1-1.2 ppm fluorine).

An analysis was made of the DMF data for approximately 3,400 Newburgh children and 2,800 Kingston children, age 6 to 12, who were in the original base study and who had had each successive examination. Data on new school children who entered the study at age 6 subsequent to the first examination were also included. This selection was made in order to have reasonable assurance that the children studied had had con-

Presented before the Section on Research, ninety-first annual session of the American Dental Association, Atlantic City, November 1, 1950.

*Director, Bureau of Dental Health; †Associate dentist (Research) Bureau of Dental Health, ‡Biostatistician, Division of Medical Services, New York State Department of Health.

1. Ast, D. B.; Finn, S. B., and McCaffrey, I. The Newburgh-Kingston caries fluorine study. I. Dental findings after three years of water fluoridation. Am. J. Pub. Health 40:716 (June) 1950.

2. Schlesinger, E. R.; Overton, D. E., and Chase, H. C., The Newburgh-Kingston caries fluorine study. II. Pediatric aspects—preliminary report. Am. J. Pub. Health 40:725 (June)) 1950.

tinuous residence in their respective cities. Previous investigators of the caries-fluorine relation stressed that continuous exposure to the fluoride ion from birth through age 8 was necessary in order to benefit from the prophylactic effect of the fluoride ion.

In the first progress report it was possible to demonstrate a consistent downward trend in DMF permanent teeth of 6 to 12 year old children in Newburgh from 21 to 15 DMF per 100 permanent teeth during three years of experience with fluoridated water. This represented a 30 per cent reduction. Reductions were noted for all types of teeth as compared with the control group in Kingston where no significant changes were observed. Although the greatest relative benefits were found among the younger children, significant benefits also were suggested in the older ages where most of the permanent teeth were already calcified and, in some instances, were present in the mouth when first subjected to fluoridated water.

One of the statements made in that first report was that "we cannot entirely rule out the possibility of variation in the interpretations of the examiners. The fact that more than one examiner was used might alter the differences between Newburgh and Kingston to some extent. However, the size of the differences in the DMF rates of the two cities is such that it is unlikely that an examiner bias could vitiate them." In the present report an attempt is made to demonstrate that through an objective roentgenographic examination of the teeth of selected age groups, the question of examiner bias in this study is not likely to account for the differences noted.

SCOPE OF THIS REPORT

This is a further progress report of the Newburgh-Kingston Caries Flourine Study. In this report, an analysis is made of the data on dental caries experience of both the deciduous and permanent teeth of approximately 3,200 school children, 5 to 12 years old, in Newburgh and 3,100 children of the same age in Kingston at the end of four years of fluoride treatment of Newburgh's water supply. In the previous report it was pointed out only children who had had continuous residence in their respective cities were included. Early in 1950 questionnaires were given to more than 3,200 children in the Newburgh schools for completion by their parents. An analysis of the answers to those questionnaires shows that the Newburgh population is a relatively stable one and that the inclusion of the small migrant groups does not alter the caries picture to any significant degree. Consequently, in this report there are included all 5 to 12 year old children present in the schools in Newburgh and Kingston on the days the examinations were made.

All of the dental examinations in the latest series were made as in previous years with mouth mirror and sharp explorer under good light. In addition, anterior and posterior bitewing roentgenograms were taken of all 7, 9 and 11 year old school children in both cities in 1950.

PRESENTATION AND ANALYSIS OF THE DATA

Table 1 shows the number of children 6 to 12 years old with permanent teeth at first and last examinations and the number of erupted permanent teeth per child in the study and control cities. The number of children in each age group is relatively large and the average number of permanent teeth per child is comparable. From these data it may be noted that there does not seem to be any change in the eruption pattern among the children in Newburgh, the study city, as compared with those in Kingston, the control city. This would indicate that any observed differences in the DMF rates

Table 1 • Average number of erupted permanent teeth per child, Newburgh and Kingston, N. Y., 1944-1950

Age[1]	Newburgh (fluoride city)				Kingston (control city)			
	1944-45		1949-50		1945-46		1949	
	No. of child. exam.	Erupted perm. teeth per child	No. of child. exam.	Erupted perm. teeth per child	No. of child. exam.	Erupted perm. teeth per child	No. of child. exam.	Erupted perm. teeth per child
6	403	4.8	430	5.0	343	4.9	388	5.0
7	394	8.8	377	9.1	350	8.9	354	9.0
8	355	11.4	356	11.7	393	11.7	400	11.7
9	407	14.7	340	14.4	337	14.0	345	14.3
10	447	18.3	357	18.1	383	17.8	340	18.3
11	392	22.2	340	22.6	390	22.0	372	22.5
12	412	25.1	363	25.2	357	24.9	316	25.1

1. Age (last birthday) at time of examination.

cannot be attributed to differences in eruption time of the various teeth.

The three year decline in DMF rates of permanent teeth previously reported continued among Newburgh's 6 to 12 year old children in the fourth post-fluoride year to a new low of 13.9 per 100 permanent teeth (Table 2, Fig. 1). This is approximately 32.5 per cent less than the rate of 20.6 per cent in 1944-1945. The Kingston rates for the 6 to 12 year age group remained substantially the same throughout the study period.

The Newburgh rates for the individual ages show the greatest reduction among the children in the early age brackets, with 77.6 per cent at age 6, 55.5 per cent at age 7, 42.1 per cent at age 8 and 38.6 per cent at age 9.

Since first permanent molars are the teeth usually most affected by dental caries, a special analysis of the condition of these teeth is presented.

Table 3 and Figures 2 and 3 show the data on first permanent molars of the children studied in two age groups, 6 to 9 and 10 to 12. In the first group are included a large proportion of children who were 2 to 5 years old at the first examination prior to exposure to fluoridated water and whose first permanent molars at that time had not been

Table 2 • DMF[1] rates per 100 erupted permanent teeth of children in Newburgh and Kingston, N. Y., 1944-1950

Age[2]	Newburgh (fluoride city)			Kingston (control city)		
	1944-5	1949-50	Per cent change	1945-6	1949	Per cent change
6	8.5	1.9	77.6	7.2	5.0	30.5
7	11.7	5.2	55.5	12.0	11.1	7.5
8	17.1	9.9	42.1	17.3	17.2	0.6
9	21.2	13.0	38.6	18.9	19.1	9.5
10	21.9	15.1	31.0	21.3	21.7	0.2
11	21.8	15.9	27.0	21.8	22.9	0.5
12	25.3	18.8	25.6	25.4	24.5	0.4
Crude rate	20.7	13.7	33.8	20.2	19.9	0.1
Adj. rate[3]	20.6	13.9	32.5	20.2	20.2	

1. DMF includes teeth decayed, missing (lost subsequent to eruption), or filled.
2. Age (last birthday) at time of examination.
3. Adjusted to permanent tooth population in Kingston 1945-6 examinations.

completely calcified or had not yet erupted. The second group, 10 to 12 year old children, were 6 to 8 years old when first subjected to fluoridated water and the crowns of their first molars were already calcified and in most instances the teeth were erupted and exposed to local environmental, presumably cariogenic, conditions.

These data reveal that the number of caries free first molars of the children in Kingston changed little in each of the age groups as compared with the children in Newburgh where the per cent of caries free first molars increased in each examination series for the 6 to 9 year age group from 58.9 to 76.9 per 100 first molars, an absolute increase of 18 per 100 first molars. For the 10 to 12 year age group in Newburgh the caries free rate increased in each series, with but one exception, from 23.8 to 32.5 per 100 first molars, or an absolute increase of 8.7 per 100 first molars.

Conversely the DMF rates for Newburgh decreased from 41.1 to 23.1 per 100 first molars for the younger group and from 76.2 to 67.5 for the older group while in Kingston the rates changed comparatively little.

With such prophylactic aids as are available today, the best that can be expected is a limited protection against dental caries. The question may then be raised as to the public health significance of water fluoridation or the potential of such a public health procedure to control dental caries.

The magnitude of the problem of dental caries has been presented by numerous investigators. The consensus is that the accumulating dental caries needs from childhood to young adulthood soon becomes too great to be dealt with by present professional personnel. The data in Kingston shows that at age 12, 25 per cent of all permanent teeth have already experienced some dental caries. Klein and Palmer[3] have demonstrated that there is a wide disparity between yearly increments of dental caries and corrections made.

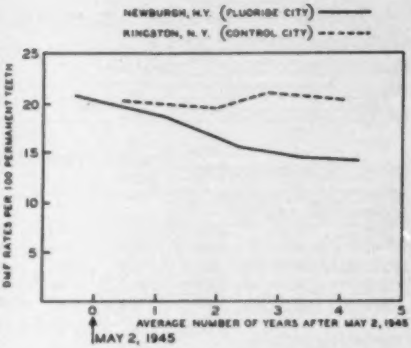


Fig. 1 • Age adjusted DMF rates of permanent teeth of children, age 6-12, 1944-1950, in Newburgh and Kingston, N. Y.

In Table 3 and Figures 2 and 3, the clinical status of the DMF first molars is presented. In both cities there has been no consistent up or down trend in the percentage of first permanent molars filled. The number of missing or extracted teeth show a small but definite decrease in Newburgh. Of greater significance, however, is a consistent and sizable decrease in the percentage of first permanent molars with untreated caries in Newburgh.

The data presented in Figure 2 show that the number of missing permanent teeth (presumably extracted because of extensive caries) for 6 to 9 year old children was reduced in Newburgh by 60 per cent while in Kingston this reduction was 23 per cent. The number of teeth filled in each city increased considerably over the four year period and the increases for each of the years is substantially the same in both cities. However the decrease by 68 per cent in untreated

3. Klein, H., and Palmer, C. E., The disparity between dental needs and dental care in school children of Hagerstown, Md., and environs. J.A.D.A., 28:1489 (Sept.) 1941.

Table 3 • Clinical status of erupted first permanent molars of children of Newburgh and Kingston, N. Y 1944-1950

City and year	Ages[1] 6-9					Ages[1] 10-12				
	No. first perm. molars	Per cent				No. first perm. molars	Per cent			
		Caries free	Untreated caries	Filled	Missing		Caries free	Untreated caries	Filled	Missing
Newburgh (fluoride city)										
1944-5	5463	58.9	32.7	7.4	1.0	5003	23.8	42.8	26.1	7.3
1946-7	5031	63.2	23.8	11.8	1.1	4446	22.4	42.2	26.5	9.0
1947-8	4798	70.0	13.8	15.0	1.3	3993	29.8	27.4	31.1	11.8
1948-9	5262	73.9	11.9	13.6	0.5	4223	31.7	24.4	34.6	9.3
1949-50	5274	76.9	10.4	12.3	0.4	4240	32.5	22.1	38.3	7.1
Kingston (control city)										
1945-6	5066	60.5	30.7	7.2	1.7	4519	25.0	40.5	22.9	11.6
1947	5058	61.3	23.8	13.2	1.7	4067	25.0	33.8	28.1	13.2
1948	5303	63.7	22.6	12.3	1.3	3924	21.7	37.1	29.3	11.8
1949	5300	63.6	19.6	15.6	1.3	4112	23.7	29.0	35.0	12.3

1. Age (last birthday) at time of examination.

caries in Newburgh compared with the 36 per cent reduction in Kingston is particularly interesting. This may be highly significant because if this trend continues it may be possible to reduce the incidence of dental caries to a point where it can be controlled by existing dental personnel.

INTERPRETATION OF CARIOUS LESIONS

In the introductory remarks it was mentioned that this report would consider the question of interpretation of carious lesions by different examiners to see if examiner bias could influence the data. Accordingly, bitewing roentgenograms were made by a staff dentist of all 7, 9 and 11 year old school children in Newburgh and Kingston, approximately 2,000 in number. These films were returned to the State Health Department in Albany where they were mounted, and read by the director of the Bureau of Dental Health and his associate. There were no identifying data available to the examiners. The mounted films were numbered by the statistical unit and care was exercised to see that the films of the Newburgh and Kingston children were intermingled in random order.

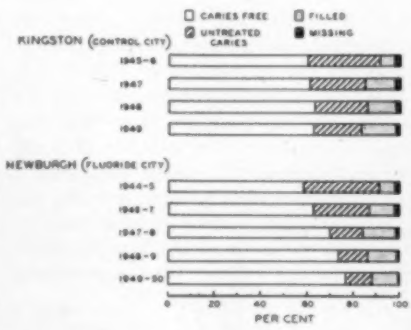


Fig. 2 • Clinical status of erupted first permanent molars in children, ages 6-9, 1944-1950, in Newburgh and Kingston, N. Y.

This report concerns itself with the DMF roentgenographic findings of the first permanent molars only. Table 4 and Figure 4 show at age 7 an absolute difference of 12 DMF upper first molars per 100 molars examined and 16 DMF lower first molars per 100 examined. At age 9 the differences are 13 for the upper and 14 for the lower molars per 100 molars examined and at age 11 the differences are 9 upper and 6 lower first molars per 100 examined. The consistent

differences at each age in favor of Newburgh are presented as evidence of differences in Newburgh and Kingston DMF rates which cannot be attributed to examiner bias. It may be pertinent to repeat that the initial clinical examinations made in Newburgh and Kingston in 1944-1946 were made by one examiner, at which time the DMF rates were the same.

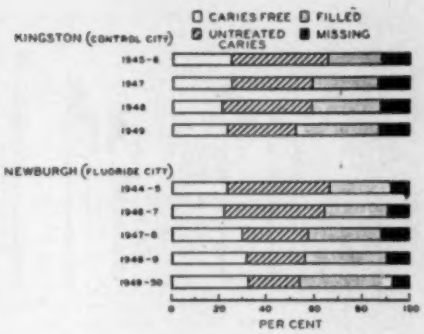


Fig. 3 • Clinical status of erupted first permanent molars in children, ages 10-12, in Newburgh and Kingston, N. Y., 1944-1950

DENTAL CARIES IN DECIDUOUS TEETH

There has been very little valid information concerning the dental caries experience of the deciduous teeth. It is not reasonable to assume that missing deciduous teeth, like missing permanent teeth, were extracted because they were carious and unsavable. Klein and Palmer,[4] in their examination of the dental problem of elementary school children, pointed out that the DMF index used for permanent teeth could not be used for the deciduous teeth. Gruebbel[5] points out that since it is not possible to make an accurate measurement of the complete caries experience in the deciduous teeth a tabulation of the caries experience of these teeth must be based on the observable past and present dental caries in the mouth at the time of the examination.

Table 5 shows the observed caries experience of the deciduous teeth in the mouths of 5 to 8 year old children at the time of the first and last examinations made in Newburgh and Kingston which are included in this report. By totaling the observed decayed (D) and filled (F) teeth, the DF rate per 100 deciduous teeth present can be determined. There is a slight downward change in Kingston but

4. Klein, H., and Palmer, C. E., The dental problem of elementary school children. The Milbank Memorial Fund Quarterly 16:267 (No. 3) 1938.

5. Gruebbel, A. O., A measurement of dental caries prevalence and treatment service for deciduous teeth. J. D. Res. 23:163 (June) 1944.

Table 4 • DMF[1] rates per 100 erupted first permanent molars from roentgenograms of children of Newburgh and Kingston, N. Y., 1950

Age[2]	Upper molars				Lower molars			
	Newburgh (fluoride)		Kingston (control)		Newburgh (fluoride)		Kingston (control)	
	No. first perm. molars	Per cent DMF	No. first perm. molars	Per cent DMF	No. first perm. molars	Per cent DMF	No. first perm. molars	Per cent DMF
7	571	18.2	448	30.1	602	26.7	503	43.1
9	537	52.5	519	65.9	542	63.5	536	77.8
11	606	67.2	474	75.9	610	81.3	478	87.4

1. DMF includes teeth decayed, missing (lost subs. to exam.).
2. Age (last birthday) at time roentgenograms were taken.

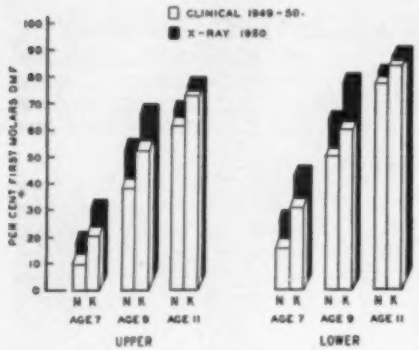


Fig. 4 • Comparative differences in DMF rates of first molars in clinical and roentgenographic examinations of children in Newburgh and Kingston, N. Y. in 1949-1950

the decrease in Newburgh is much greater. This is especially true in the 5 and 6 year old children who were 1 and 2 years old when first subjected to fluoridated water.

In Kingston the decrease in DF deciduous teeth at age 5 was from 21.5 per 100 deciduous teeth to 18.7 or a decrease of 13 per cent while in Newburgh the decrease was from 27.2 DF per 100 deciduous teeth to 10.9, a decrease of 60 per cent. At age 6 the differences were for Kingston 32.1 to 24.8, a drop of 22.9 per cent, while in Newburgh it was from 34.2 to 18.6 or 39.7 per cent.

A further analysis (Table 6) of the potential protective action of ingested fluoridated water was made as to the number of 5 and 6 year old children with completely caries free deciduous teeth. Here again there was the problem of exfoliated or extracted incisors. Therefore it was decided that only the deciduous cuspid and and deciduous first and second molars of the 5 and 6 year old children would be considered. Thus only those children who had all 12 caries free deciduous teeth present (4 cuspids and 8 molars) were considered caries free. As with the DF rates presented in Table 5, there was an increase of 30 per cent in the number of caries free children in Kingston in 1949 as compared with the first examination, while in Newburgh the increase was 115 per cent.

SUMMARY

1. The DMF rates among permanent teeth of 6 to 12 year old children in Newburgh show a consistent downward trend after four years of fluoridation whereas the DMF rates in the control city of Kingston show no changes. The reduction after four years of fluoride experience in Newburgh is from 20.6 DMF per 100 permanent teeth to 13.9, or a reduction

Table 5 • DF[1] rates per 100 deciduous teeth present in children, ages 5-8, in Newburgh and Kingston, N. Y., 1944-1950

Age[2]	Newburgh (fluoride city)				Kingston (control city)			
	1944-45		1949-50		1945-46		1949	
	No. decid. teeth present	Per cent DF	No. decid. teeth present	Per cent DF	No. decid. teeth present	Per cent DF	No. decid. teeth present	Per cent DF
5	5205	27.2	7004	10.9	4969	21.5	6187	18.7
6	6737	34.2	7140	18.6	5685	32.1	6422	24.8
7	5274	42.3	5074	30.3	4645	43.3	4722	34.8
8	3894	48.0	3818	38.9	4180	47.2	4298	42.4

1. DF includes teeth decayed or filled.
2. Age (last birthday) at time of examination.

Table 6 • Children with caries free deciduous cuspids, first and second molars in Newburgh and Kingston, N. Y., 1944-1950

Age[1]	Newburgh (fluoride city)				Kingston (control city)			
	1944-5		1949-50		1945-6		1949	
	No. child.	Per cent caries free[2]	No. child.	Per cent caries free[2]	No. child.	Per cent caries free[2]	No. child.	Per cent caries free[2]
5	274	23.0	365	49.9	259	28.2	324	33.0
6	403	14.9	430	32.1	343	17.2	388	25.5
Crude rate		18.2		40.3		21.9		28.9
Adjusted rate[3]		18.4		39.7		21.9		28.6

1. Age (last birthday) at time of examination.
2. Includes only those children with all 12 teeth present and caries free.
3. Adjusted to age distribution of children in Kingston in the 1945-6 examinations.

of 32.5 per cent. The rate in Kingston remained at 20.2 DMF per 100 permanent teeth.

2. The number of caries free first permanent molars increased in Newburgh after four years of fluoride exposure among 6 to 9 year old children from 58.9 per 100 first molars to 76.9 and for the 10 to 12 year old children from 23.8 to 32.5. The number of caries free first permanent molars among Kingston children remained substantially unchanged.

3. The differences noted in DMF rates of first permanent molars by roentgenographic examination for 7, 9 and 11 year old children in Newburgh and Kingston are comparable to those observed in the clinical examination. This further confirms the validity of the differences reported in the clinical examination.

4. Decreases in observed DF deciduous teeth were noted for each of the ages 5 to 8 in both Newburgh and Kingston. However, the percentage reduction at each age level was significantly greater in Newburgh.

5. An analysis of the number of children with all of their deciduous cuspids and molars completely caries free shows that there was an increase of 6.7 per 100 children in Kingston while in Newburgh the increase was 21.3, or more than three times as great.

6. The potential public health significance of this prophylactic technic is suggested by noting the consistent decrease in untreated dental caries in the study area whereas the untreated caries remained stationary in the control city. This cannot be attributed to any differences in the amount of corrective service in both cities as these are substantially the same. This may ultimately lead to a decrease in the dental caries problem to a point where the present dental personnel and facilities may be able to control this almost universal disease.

BUREAU OF ECONOMIC RESEARCH AND STATISTICS

Nineteen fifty survey of the dental profession. VI. Dental services rendered

Dentists who participated in the survey[1] recorded the types of dental services rendered during the week of April 16-22, 1950, along with the age and sex of the patient. The resultant statistics provide a picture of the relative frequency of 18 different dental services.

Table 46 and Figures 13 through 19 give the number of patients of the sample consisting of 29,574 patients who received the various types of dental operations and treatments.[2] Table 47 gives the mean frequency of each type of service. For instance, the average patient who had roentgenograms taken had 3.50 pictures taken, and the average patient having extractions had 1.87 teeth extracted.

As shown in Table 46 and Figure 13, there is considerable variation among age groups in the percentage of examinees who had roentgenograms taken. This percentage was highest (89.1 per cent) in the age group 30 to 39 (except for the few patients 80 and over, among whom two more had roentgenograms taken than had examinations). The lowest percentage (32.8 per cent) was in the age group under 10. It is true that some of the patients having roentgenograms taken were doubtless examined the previous week, but on the whole the ratio of those examined to those having roentgenograms taken during this week should approximate the ratio of any other week.

More partial upper dentures were furnished to people in their thirties than to any other age group. The peak for partial lower dentures was in the forties; full upper dentures in the fifties, and for full lower dentures in the sixties. There were generally more upper than lower full dentures inserted along the entire age scale. In the case of partial dentures, however, more lowers than uppers were furnished to patients between the ages of 50 and 69 (Table 46 and Figures 16 and 17).

The age curves of patients having fluoride treatments and orthodontic sittings are presented by five-year age groups in Figure 19. Over half of all orthodontic patients were in the 10 to

1. The first five articles of this survey appeared in the August, September, October, November and December 1950 issues of The Journal of the American Dental Association in the section entitled "Reports of Councils."

2. In Figures 13 through 18, the horizontal scales are identical but the vertical scales vary. It was impractical to make the vertical scales identical because of the wide variation in frequency among the various dental services.

Table 46 • Number of patients receiving various dental services, by age and sex, based on sample of 29,574 patients

	–9		10–19		20–29		30–39		40–49		50–59		60–69		70–79		80–		Totals		Total
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
Examinations	306	346	373	443	394	668	407	580	262	448	187	289	104	176	25	19	2	4	2,060	2,973	5,033
Roentgenograms	104	113	232	263	318	592	350	535	249	347	173	200	82	84	8	15	4	4	1,520	2,153	3,673
Prophylaxes	183	175	296	372	383	657	460	710	329	485	229	290	95	125	17	25	3	3	1,995	2,842	4,837
Extractions	241	207	315	306	370	582	385	478	340	340	257	238	154	138	35	30	7	6	2,104	2,325	4,429
Fillings and inlays	785	833	1,506	1,729	1,154	2,071	982	1,727	601	973	336	492	137	225	26	37	7	5	5,534	8,092	13,626
Single crowns	9	8	11	12	36	45	37	56	25	51	21	38	6	16	1	5	0	1	146	232	378
Fixed bridges	0	0	5	7	35	44	37	45	23	37	14	23	5	4	3	3	0	0	122	163	285
Full upper dentures	1	0	2	3	14	26	24	50	47	57	68	60	46	65	12	13	0	1	214	275	489
Full lower dentures	0	0	1	1	6	8	12	28	27	35	38	38	30	56	10	10	1	1	125	177	302
Partial upper dentures	0	1	1	4	9	19	29	34	29	33	22	22	12	10	3	7	1	0	106	130	236
Partial lower dentures	0	1	1	2	12	11	14	30	23	32	21	29	18	20	3	6	0	1	92	132	224
Root canal treatments	27	24	41	52	37	54	25	51	21	25	23	11	9	13	0	0	0	0	183	230	413
Orthodontic treatments	60	75	390	551	21	47	5	14	5	4	3	3	1	1	2	1	0	0	487	696	1,183
Periodontal treatments	11	5	20	27	53	101	95	123	81	123	47	65	22	27	7	6	0	0	336	477	813
Fluoride treatments	94	127	54	66	6	8	5	13	6	10	7	3	1	2	0	0	0	0	173	229	402
Ammoniacal silver nitrate treatments	30	23	16	27	18	38	16	24	19	18	5	7	4	6	4	3	0	0	112	146	258
Zinc chloride and potassium ferrocyanide treatments	6	3	9	10	8	16	5	16	10	12	6	8	1	2	0	1	0	0	45	68	113
Total	1,857	1,941	3,273	3,875	2,874	4,987	2,888	4,514	2,097	3,030	1,457	1,816	727	970	156	181	25	26	15,354	21,340	36,694

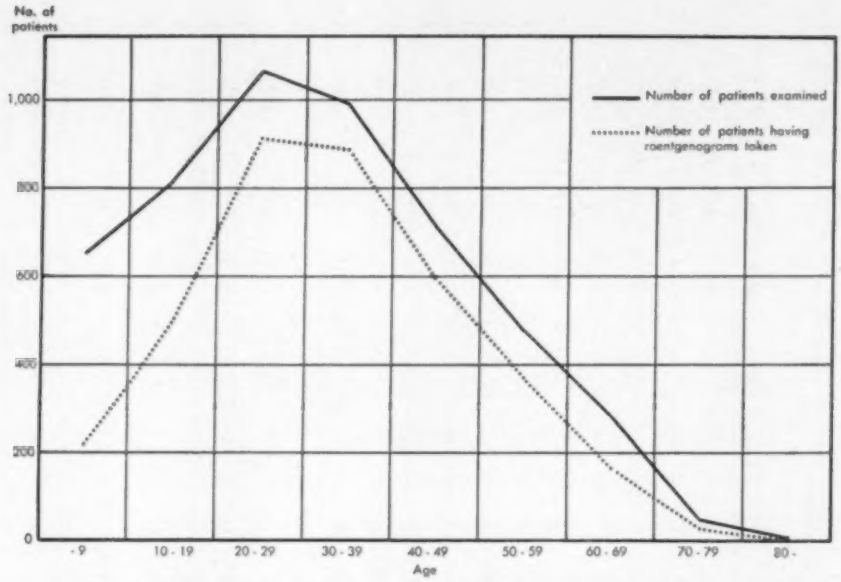


Fig. 13 • Number of patients examined and number of patients having roentgenograms taken, by age groups (sample of 29,574 patients)

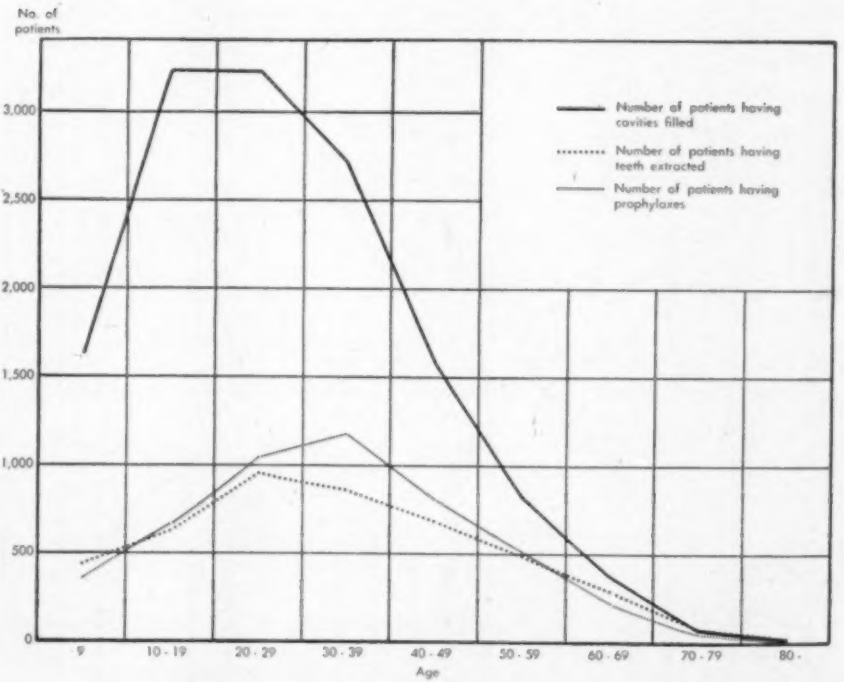


Fig. 14 • Number of patients having cavities filled, teeth extracted, and prophylaxes, by age groups (sample of 29,574 patients)

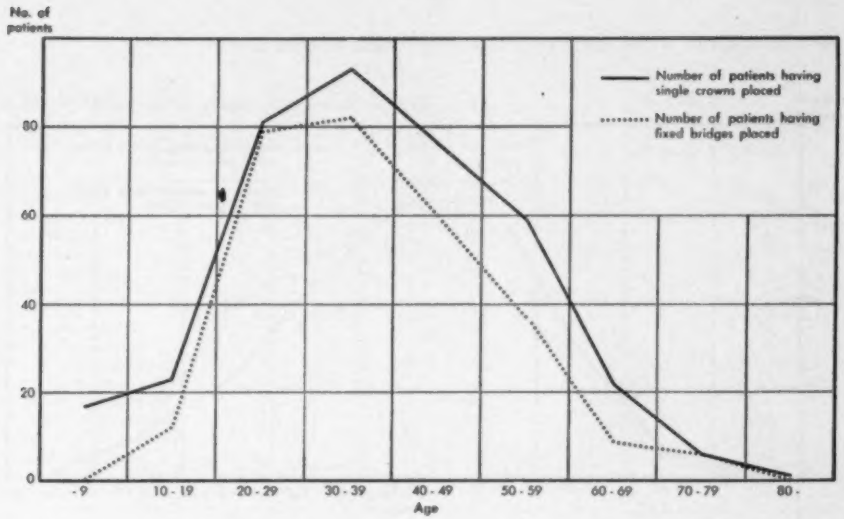


Fig. 15 • Number of patients having single crowns and fixed bridges placed, by age groups (sample of 29,574 patients)

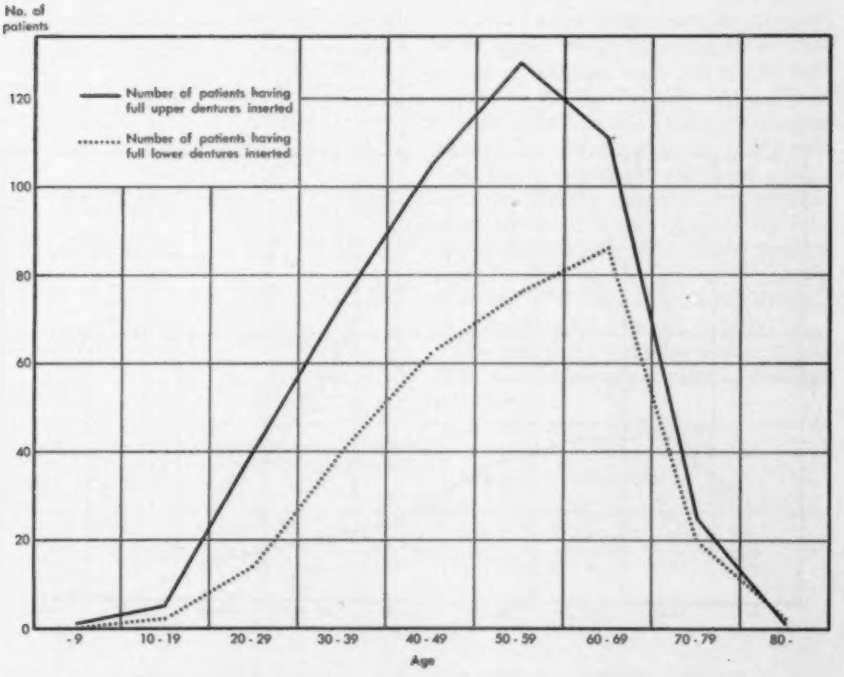


Fig. 16 • Number of patients having full upper and full lower dentures inserted, by age groups (sample of 29,574 patients)

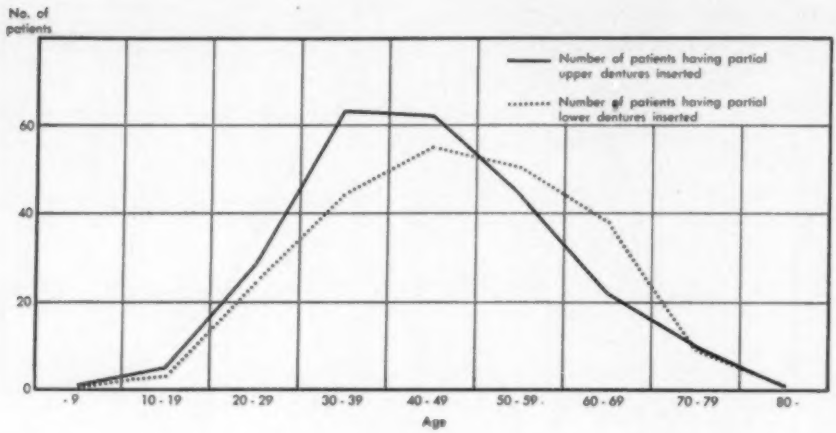


Fig. 17 • Number of patients having partial upper and partial lower dentures inserted, by age groups (sample of 29,574 patients)

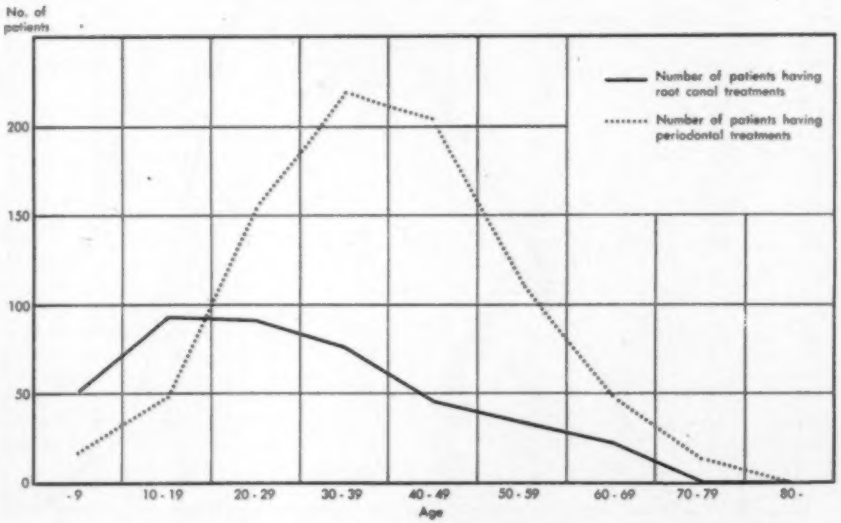


Fig. 18 • Number of patients having root canal and periodontal treatment, by age groups (sample of 29,574 patients)

Table 47 • Mean number of operations or treatments per patient

Type of service	No. of operations or treatments	No. of patients	Mean
Examinations	5,123	5,033	1.02
Roentgenograms	12,844	3,673	3.50
Prophylaxes	4,899	4,837	1.01
Teeth extracted	8,291	4,429	1.87
Fillings and inlays	22,950	13,626	1.68
Single crowns	428	378	1.13
Fixed bridges	313	285	1.10
Full upper dentures	490	489	1.00
Full lower dentures	302	302	1.00
Partial upper dentures	236	236	1.00
Partial lower dentures	225	224	1.00
Root canal treatments	492	413	1.19
Orthodontic treatments	1,216	1,183	1.03
Periodontal treatments	891	813	1.10
Fluoride treatments	425	402	1.06
Ammoniacal silver nitrate treatments	318	258	1.23
Zinc chloride and potassium ferrocyanide treatments	132	113	1.17

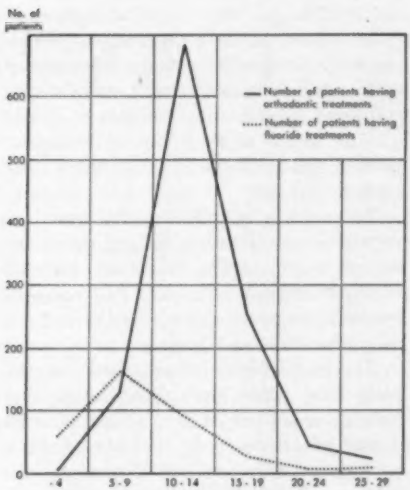


Fig. 19 • Number of patients having orthodontic and fluoride treatment, by age groups (sample of 29,574 patients)

14 year age group. More fluoride treatments were administered to the 5 to 9 year age group than to any other group.

A few fluoride treatments are recorded in the upper age groups, and some other entries may appear to be out of line with respect to the age of the patient. It is possible that in some instances dentists recorded an operation in the wrong column. It is also possible that these apparent errors actually occurred. For instance, an elderly patient convinced of the efficacy of sodium fluoride topically applied might insist upon such treatment. At the other end of the age scale, a full denture for a child under 10 is not unheard of.

The next and concluding article of this series will present a summary of findings of the survey.

B. Duane Moen, Director
Leslie M. FitzGerald, Chairman
Advisory Committee

The dental laboratory issue: VI. The way out

The way out of the troublesome questions which confront the dental profession and the laboratory industry in their mutual relations has been indicated in the series of articles which has been published in these columns during the last five months. It remains for this concluding article, even with some repetition, to review the whole situation as it has been presented.

THE FIRST IMPERATIVE STEP

It was pointed out in the beginning that differences of view among the laboratories themselves halt progress. Two national, or would-be national, organizations of laboratories continue to belabor each other upon issues which appear to the outside observer to be inconsequential. Common sense continues to dictate that the laboratories will serve their own best interests, as well as the best interests of the dental profession, by uniting in one over-all national organization. If such action means the disappearance of all old titles and forms, so much the better, if a new association arises which can speak effectively for the entire industry.

This first step also includes recognition by the dental profession as a whole that the detached commercial dental laboratory has come to stay. The dentists who desire to maintain their own laboratories will always be free to do so. The fact cannot be overlooked, however, that the great bulk of the laboratory work is already done by the detached laboratories. It cannot be denied that the dental profession has been slow to acknowledge this situation. Unity of action on the part of the laboratories and unity of attitude in the face of facts on the part of the dental profession are essential as a basis for common understanding.

THE PRESENT CONFUSION

The present unrest and confusion are chargeable to both the profession and the industry. Dentists still differ widely in their conception of the function and place of the laboratory as an adjunct of the profession. State dental societies still differ widely in their proposals for dealing with the problem. Some laboratories want state regulation and some want complete business independence. Technicians, so far as they have unitedly expressed themselves, want licensure by the state.

There is no definite trend toward the regulation of laboratories and the licensure of technicians by the state. The one example in South Carolina has not thus far been outstandingly successful and sets no pattern for the future.

The one legislative movement on the state level which appears to be gaining public confidence is the amendment of dental practice acts in the several states providing for the issuance of prescriptions by licensed dentists to laboratories to perform work for them. Twenty-five states have provided by law, in one way and another, for this procedure. There is nothing whatever in these legislative requirements inimical to the legitimate interests of the laboratories. The burden of proof rests heavily upon laboratories

This article is the last in a series of six prepared by the Council on Dental Trade and Laboratory Relations on the relationship between dentistry and one of its most important auxiliaries.

which object to such statutes. The ethical, law-abiding laboratory, which desires to perform its true function of service to the dental profession, has nothing to fear from prescription requirements. The argument frequently advanced by zealous laboratory managers that dentists are not capable of writing prescriptions and of evaluating the work of the laboratory is a mere plea in avoidance. Who knows what is competent prosthetic service if the dentist does not?

Our dental schools in the United States lead the world. More than 25 per cent of the curriculum and of the teaching time in the four year dental course is devoted to prosthetics and dental materials. Indeed, there is considerable complaint that too much time is given to this field. Many technicians become highly expert in the execution of the mechanical processes committed to them; but few, if any, of them are or need to be fully trained in prosthetics as the dentist must be.

In all these considerations these facts stand out: dentistry is a learned profession and the dentist is professionally trained and is licensed by the state to practice; mechanical work in a dental laboratory upon the order or prescription of a dentist, is a trade or craft. No length of argument or legislative endeavor will change these basic facts. Compliance with them, from both sides, will give greater dignity and satisfaction to the craftsman and to the professional practitioner.

THE TRAINING OF TECHNICIANS

Much energy has been lost in idle debate about the best way to train technicians. The truth is that there is no one best way to train anybody for anything. The institution that claims it has found the one best way is open to suspicion. Laboratories not infrequently disparage formal institutional training of technicians and loudly proclaim that apprenticeship is the one best method for such training. Commercial schools seek to lure youth into their courses, sometimes offered on a reasonably sound educational basis but more often calculated, at whatever cost to education, to pay dividends.

Both the commercial laboratory and the commercial school for the training of technicians overlook a patent fact in American education. Apprenticeship training is valued in many areas at its real worth and commercial schools in some fields offer legitimate instruction. The fact is, however, that apprenticeship training as the sole means of preparation for many trades and crafts tends to give way to basic formal institutional training as the beginning step. Moreover, the elimination of the educational enterprise organized for profit goes on apace.

Recognizing these trends the Council on Dental Education has set a pattern of a course for the training of dental laboratory technicians which will be recognized only when conducted by reputable educational institutions on a nonprofit basis.

There is no reason, the craft not serving the public directly, why all technicians should have identical training. Some will undoubtedly continue to get their training in the hard way but it is hardly to be doubted that in the years ahead nonprofit schools will take the lead in setting standards and in offering satisfactory training in the field of the mechanical processes, performed by technicians, as a legitimate adjunct to the practice of dentistry.

THE LICENSING BOGIE

Settlement of the issues between the dental profession and the laboratory industry is delayed by sporadic efforts to provide by law for the licensing of technicians. It is frequently urged that such legislation is necessary in order to prevent unethical and illegal procedures by technicians. This argument is part and parcel of the common American notion that the way to remedy any evil is to pass a law.

What is clearly needed in this situation is not more law but effective law enforcement. In every state of the Union the practice of dentistry is clearly defined by law and is confined to persons licensed by the state. Those definitions make it illegal for any person not trained and licensed as a dentist to diagnose or treat in any way any "physical condition of the human teeth, aveolar process, gums, or jaws." The technician, not trained and licensed as a dentist, violates existing law when he departs from the mechanical work assigned to him and undertakes to deal directly or indirectly with a patient. The laws are perfectly clear and no technician with normal faculties need be in any doubt as to his limitations by law.

Moreover, professional licensure is ordinarily limited by the state to persons who serve and contact the public directly. The dentist is wholly responsible to the public for the service he renders including all the mechanical appliances he uses in his practice. The laboratory and the technician cannot, under law, contact the patient and diagnose or treat his ailment in any way. Neither are they in any way responsible to the public for the work they do for dentists. If dental laboratory technicians should be licensed by the state, then a hundred other fields of skilled craftsmanship should come under the same category. There is clearly no public necessity for the licensing of laboratory technicians.

It must be frankly admitted that dentists generally view the proposal for the licensing of technicians as an entering wedge for the establishment of a quasi profession to engage in the practice of sub-level dentistry. Laboratories and technicians do not take sufficient note of this attitude of the profession. It cannot be passed off as a merely selfish concern. Professions in America have largely determined their own standards in advance of their crystallization into law. Witness medicine law, engineering, and architecture. For more than a hundred years the scope of dental practice and its regulation by the public have been largely determined from within the profession. There is a universal professional pride which outweighs individual selfishness. Dentistry does not mean to give up to medicine on the one hand, nor to laboratories and technicians on the other hand, any of the ground it has won. That is as it should be and the sooner the laboratory industry acknowledges that it is an adjunct to the dental profession and not an independent public agency the better for both craft and profession.

THE MEANING OF ACCREDITATION

The accreditation of dental laboratories by the Council on Dental Trade and Laboratory Relations of the American Dental Association has proceeded haltingly until recently, in part because of apprehension about the meaning of the word accreditation. Somehow, strangely, laboratories have had the notion that there is some hidden meaning in the word, some ulterior motive on the part of the Council in its use. It might have been wiser from the beginning for the Council to have talked about the approval of laboratories for that is simply all the word means as the Council has employed it. There was also some concern by laboratories at first about the details involved in the process of accreditation.

The air has now been cleared. Acting upon the recommendation of the Council, the House of Delegates of the American Dental Association at its recent meeting in Atlantic City approved of a revised plan of accreditation on the state level. Under this plan with the guidance of the Council each state dental society through its prosthetic service committee or other agency will endeavor to establish mutually satisfactory understandings with the laboratories. All the whole undertaking means is that the dental profession desires to see a list of accredited or approved—take your choice—labora-

tories in each state. There will be no effort to reduce the procedures in the states to a rigid uniform pattern. There are still troublesome reverberations in some quarters but the laboratories, it is to be hoped, will be guided in the long run by their own best interests; and those interests embrace cordial, cooperative relations with the dental profession. The effort to single out and accredit or approve the laboratories is an over-all indication of the desire of the profession to work effectively and harmoniously with the industry. Experience in many other fields shows that once a legitimate accrediting agency is fully understood its usefulness is demonstrated. As time goes on the unaccredited or unapproved or unsatisfactory laboratory will gradually disappear. The disappearance of the unethical laboratory which does shoddy work and practices dentistry illegally will be a boon to the industry and to the profession.

THE WAY OUT

The way out is simple if good will and honest effort prevail in all quarters. Let the steps ahead be repeated again.

1. The early organization of a single national association which can speak authoritatively for the entire industry.

2. The early enactment of amendments to the dental practice acts in all the states providing that dental laboratories shall be definitely restricted to mechanical processing in dentistry to the prescriptions from licensed dentists. Adequate means for the enforcement of such legislation should be provided.

3. Encouragement of the plan now being fostered by the Council on Dental Education for the strategic location of nonprofit schools for the training of dental laboratory technicians. Such a plan does not contemplate imposing any hard and fast educational requirement upon laboratories in their choice of technicians.

4. Recognition by laboratories and technicians that their regulation and licensing by law is fundamentally unnecessary and publicly undesirable, and that their desires may best be met by cooperative relations with the dental profession.

5. Effort in each state to work out a plan for the establishment of lists of accredited or approved laboratories as now contemplated and recommended by the Council on Dental Trade and Laboratory Relations of the American Dental Association.

6. Strict observance of existing dental practice acts in all states by laboratories, by technicians and by dentists. This series of articles has not meant to put blame wholly upon any one agency for the existing misunderstandings. The will to be guided by ethical principles, to observe without cavil existing law and to work together to advance the quality of dental service provided for the American people may be counted upon in good time to bring harmony and common understandings between craft and profession.

COUNCIL ON RELIEF

Relief fund contributions

Contributions to the Relief Fund of the American Dental Association as of January 1 amounted to $62,684.17, approximately 63 per cent of this year's goal of $100,000. The January 1 total represented donations from 22,853 dentists, or about one third of the Association's active members. The average contribution was $2.75.

The Alabama Dental Association led all other state societies in meeting their quotas. Dentists from that state have contributed $1,288, or 165.1 per cent of their quota of $780. Other states which have passed the 100 per cent mark are Nevada, North Dakota and Tennessee, while Alaska, Nebraska and New Mexico have reached 90 per cent of their quota.

Although this year's response from members to this worthy undertaking has been more generous than ever before, a few members apparently have been unable to grasp the spirit or understand the purpose of the project. Donations to the Relief Fund are used only for financial relief of worthy needy dentists and their families. Half of each contribution is deposited in the American Dental Association Relief Fund and half is returned to the relief fund of the state society of which the donor is a member.

Thirty days remain in which to join this year's relief drive. Members who have not contributed or who wish to increase their donations are urged to forward their contributions to the American Dental Association Relief Fund, 222 East Superior Street, Chicago.

Contributions by constituent societies as of January 1 are as follows:

	1950-51 Quotas	To Jan. 1 Contributions	Pct.
Affiliate		$ 66.00	
Air Force	$ 480.00	169.50	35.3
Alaska	40.00	36.00	90.0
Alabama	780.00	1,288.00	165.1
Arizona	280.00	150.50	53.8
Arkansas	480.00	424.00	88.3
Army	490.00	254.50	51.9
California	3,670.00	2,461.50	67.1
Colorado	890.00	328.00	36.9
Connecticut	1,920.00	1,371.50	71.4
Delaware	160.00	88.00	55.0
D. C.	810.00	689.00	85.1
Florida	1,200.00	868.50	72.4
Georgia	990.00	870.50	87.9
Hawaii	370.00	328.00	88.6
Idaho	270.00	188.50	69.8
Illinois	7,570.00	5,070.94	67.0
Indiana	2,220.00	1,532.50	69.0
Iowa	1,800.00	1,243.35	69.1
Kansas	1,040.00	660.80	63.5
Kentucky	1,070.00	601.50	56.2
Louisiana	990.00	442.00	44.6
Maine	460.00	230.70	50.2
Maryland	1,040.00	727.50	70.0
Massachusetts	3,720.00	2,107.65	56.7
Michigan	3,830.00	2,437.00	63.6
Minnesota	2,990.00	1,998.30	66.8
Mississippi	530.00	320.60	60.5
Missouri	2,620.00	1,858.50	70.9
Montana	350.00	284.65	81.3
Navy	880.00	351.50	39.9
Nebraska	1,130.00	1,108.70	98.1
Nevada	90.00	90.50	100.6
New Hampshire	290.00	198.00	68.3
New Jersey	4,220.00	2,996.25	71.0
New Mexico	200.00	187.00	93.5
New York	15,590.00	7,266.15	46.6
North Carolina	1,220.00	861.50	70.6
North Dakota	330.00	410.55	124.4
Ohio	4,890.00	2,916.58	59.6
Oklahoma	910.00	551.65	60.6
Oregon	1,170.00	955.50	81.7
Panama C. Z.	30.00	19.00	63.3
Pennsylvania	7,140.00	4,107.15	57.5
Pub. H. Service	250.00	113.00	45.2
Puerto Rico	270.00	96.00	35.6
Rhode Island	530.00	228.00	43.0

South Carolina	440.00	176.00	40.0
South Dakota	350.00	205.50	58.7
So. Calif.	4,420.00	2,553.75	57.8
Tennessee	1,150.00	1,450.00	126.1
Texas	3,100.00	1,587.65	51.2
Unorganized		5.00	
Utah	490.00	102.50	20.9
Vermont	190.00	93.50	49.2
Vet. Admin.	1,040.00	284.00	27.3
Virginia	1,150.00	800.00	69.6
Washington	1,670.00	1,416.50	84.8
West Virginia	740.00	422.00	57.0
Wisconsin	2,890.00	1,494.00	51.7
Wyoming	170.00	101.00	59.4
Students		437.75	
Totals	$100,000.00	$62,684.17	62.7

Leo W. Kremer, Chairman

JUDICIAL COUNCIL

Newspaper advertising

The Judicial Council of the American Dental Association is required to render many opinions and decisions each year. Some of these opinions afford interesting reading as well as guides to reasonable conduct. In publishing them, all parts are deleted that would identify the inquirers or those whose names may be associated with the controversy. The questions raised in the following inquiries are covered by the Principles of Ethics of the American Dental Association, copies of which may be secured by writing to the Central Office of the Association.

QUESTION: We all know that the biggest prerequisite for preventive dentistry is patient education. I have used the booklets of the American Dental Association successfully in patient education and feel they are invaluable; however, these can only be used to advantage when patients visit the office.

There is that greater group of individuals who cannot be educated dentally towards preventive procedures, as they have not sought dental care.

I feel that an ideal method of getting to this large group of individuals is through ethical ads giving dental information such as is contained in your various booklets.

I am in a comparatively small community of approximately 20,000 people and would be able, with the cooperation of the local press, to institute weekly informative unsigned ads.

Don't you think this would be a step in educating more people to proper dental facts?

I should be interested in any comments or suggestions in regard to the suggestion.—*D.D.S., Michigan.*

REPLY: The Judicial Council of the American Dental Association is not disposed to approve advertising by individual dentists even though the name of the dentist so advertising is not included in the text or otherwise in the advertisement.

A program such as you seem to have in mind may not merit disapproval at the national level, provided, however, that it is sponsored, supervised and financed by a component dental society and the plan receives the sanction by the constituent (state) association in which the component society holds membership.—*Chairman, Judicial Council.*

FEBRUARY 1951

LON W. MORREY, D.D.S., EDITOR
VOLUME 42 • NUMBER 2
Published by the American Dental Association
222 East Superior Street • Chicago 11, Illinois

THE Journal OF THE AMERICAN DENTAL ASSOCIATION

Editorials

The huxleys and the hucksters: new toothbrushing study may precipitate a new dentifrice advertising deluge

The long awaited report of the Aurora-Peoria toothbrushing study conducted by researchers from the University of Illinois College of Dentistry is published elsewhere in this issue of THE JOURNAL. The two-year project, probably the most comprehensive and carefully conducted study of its kind ever undertaken, involved more than 1,700 elementary school children who brushed their teeth twice daily under the supervision of their classroom teachers. The researchers in charge of the study, modern Huxleys,[1] divided the children into four groups. Children in the first group brushed their teeth with a powder that contained 5 per cent dibasic ammonium phosphate, 3 per cent urea and 5 per cent bentonite. Those in the second group used the same powder minus the bentonite. Children in the third group used a nonammoniated, nonureated powder while children in the fourth, or control, group were permitted to follow their unsupervised mouth hygiene practices.

The Illinois Huxleys, by comparing the preclinical, postclinical and roentgenographic examinations of the pupils, report that the incidence of new caries among the children who used a nonammoniated dentifrice was 9.3 per cent less than among children in the unsupervised control group, and that the incidence of new caries among the children who brushed their teeth with the ammoniated dentifrice was about 12 per cent less than among children who used the nonammoniated dentifrice.

The Aurora-Peoria study is extremely important in that it adds one more chapter to the volume of evidence indicating that frequent and careful brushing of the teeth reduces the incidence of dental decay. It also provides evidence that an ammoniated

dentifrice, used under controlled conditions, produces somewhat better results than a nonammoniated dentifrice.

It will be interesting to see what the hucksters do with the Huxley findings. On the basis of this study advertising copywriters may state that the supervised use of a dibasic ammonium phosphate and urea dentifrice will reduce caries activity in children about 12 per cent more effectively than use of a nonammoniated dentifrice, or they may state that the frequent and careful use of an ammoniated tooth powder is twice as effective as use of a nonammoniated dentifrice. Both statements are true but the implications in the latter are far greater than those in the former.

It is unfortunate that so many scientific reports presented by the most careful and conscientious research workers are distorted by hucksters at times for purely commercial purposes. This distortion may consist of overemphasizing minor factors with a consequent tendency to obscure basic considerations. It may involve the use of trick phraseology to imply more than the investigators claimed or it may consist of discreet omissions from the researchers' report in order to bolster sales.

It is hoped that the advertising geniuses charged with the promotion of ammoniated dentifrices will not resort to the omissions and commissions that seem to have become synonymous with dentifrice advertising. It is hoped that the hucksters will use the same restraint in presenting their product to the public as the Huxleys used in presenting their report to the profession, and, finally, it is hoped that the copywriters, in voicing the virtues of their particular powder, will emphasize the anticariogenic value of an intensive program of dental hygiene for children.

1. Huxley, Thomas Henry (1825-1895), English biological scientist.

The relief fund campaign: still time to contribute

The Council on Relief reports[1] that the cooperation of members in the current relief seal campaign is the best in the history of the Association. Approximately two thirds of this year's $100,000 goal was reached by January 1. However this excellent record is marred by the fact that only one third of the members have contributed. Apparently some members have overlooked the relief seal request which they received last November, and perhaps a few do not understand the purpose of the fund or the urgency of the request.

The Relief Fund of the Association is used only to aid worthy needy dentists and their families. And, unfortunately, the number of dentists in that category grows greater each year. One half of the donations is deposited in the Association's Relief Fund and one half is returned to the state society to which the donors belongs.

If you have not contributed to date, or if you wish to increase your donation, please send your check immediately to the American Dental Association Relief Fund, 222 East Superior Street, Chicago. Do not wait for the special reminder from the Council on Relief which is being mailed this month.

1. Council on Relief report in this issue, page 206.

Gearing dental manpower to national emergency machinery

The greatly expanded military blueprint which national architects are now drafting causes one to wonder how soon civilian enterprise will succumb completely to military management. In his State of the Union message January 8, President Truman recommends a defense program calling for the expenditure of approximately $41,000,000,000, gearing production to 50,000 planes and 35,000 tanks per year and a military machine of 3,500,000 men.

A fighting force of three and a half million will require a minimum of 7,000 dentists. How to provide that number for military purposes without seriously curtailing dental services to the civilian population presents a serious problem. This problem will be magnified further if the January 10 recommendation of Secretary of Defense Marshall is adopted. General Marshall urges a 27-month military training and service program for all 18 year old boys. Such a program if approved by Congress would seriously deplete the flow of preprofessional students for two full years, and thereby aggravate the current shortage of America's dental manpower.

Last October the Council on Dental Education of the Association, anticipating the dental needs of the country, recommended to the National Security Resources Board a long range program which would avoid the mistakes of World War II, meet the current needs of the military and civilian population and insure a continuing supply of well trained dentists for the future. The Council proposed that all dental students be deferred as long as they make satisfactory progress in their studies and that a supply of qualified predental students be assured in order to maintain an uninterrupted and maximum flow of graduates into the profession. The Council also recommended that graduate students in dentistry and those serving internships, residencies and teaching fellowships be permitted to continue their planned educational program without interruption and that they be given an opportunity, upon completion of their work, to become full-time dental faculty members before being considered for the Armed Forces. Dental teachers, certified as essential, should be deferred from military assignment as any further reduction in present understaffed faculties would affect seriously the functioning of dental schools and prevent them from expanding their services and increasing the number of graduates.

The need for gearing the output of dental graduates to meet the requirements of the Armed Forces, plus the demands of an expanding civilian population, is self-evident. All dental schools should evaluate their facilities with a view toward determining methods that will enable them to increase the number of graduates. Should a dental school require additional funds to finance its program, expand its facilities and accommodate more students, such aid, with appropriate safeguards, might well be accepted from Federal sources.

This program, proposed by the Council on Dental Education and approved by the American Association of Dental Schools, is in line with proposals made by the American Council on Education. It is infinitely more practical than the plan presented by the Secretary of Defense, as it is designed to meet the long range dental needs of the country in addition to the immediate needs of the military.

The march of dimes

It is not too late to join the March of Dimes.
It is not too late to contribute to one of the great humanitarian causes in the country.
It is not too late to participate in the program of relief for polio patients in your community.

The threat of infantile paralysis to the American people grows increasingly greater each year. During the past decade the number of polio victims, largely children, has increased almost fourfold, from 26,255 during 1939-1941 to more than an estimated 100,000 during 1948-1950. During the past three years patient care alone cost more than $58,000,000 in March of Dimes funds.

Members of the dental profession are always being asked to share their purses with the less fortunate and they always respond willingly. The request this year from the National Foundation for Infantile Paralysis is particularly worthy. Anyone who has seen a child stricken with poliomyelitis and has witnessed the aid which the National Foundation provides the victim will have no hesitancy in contributing generously. The funds are used carefully in each community to help finance hospital care and to provide braces and other expensive services which would impoverish many families.

This year the March of Dimes campaign is especially urgent. Demands on the Foundation for remedial care have been so great that little is left for research into the cause of the dread disease. Furthermore the purchasing power of the dollar has shrunk to 58 cents in comparison with prewar days, while the number of infantile paralysis cases has nearly quadrupled.

Washington News Letter

Washington in January witnessed a number of developments of importance to civil dentistry. Occurring as they did in an atmosphere of confusion and uncertainty, only time will tell whether they will achieve a higher degree of orderliness and efficiency than has characterized the Federal medical, dental and hospital system since commencement of the Korean conflict.

Replacement of Paul B. Magnuson as chief medical director of Veterans Administration, climaxing a long standing feud between him and Administrator Carl R. Gray, Jr., was an event that cannot fail to have repercussions on the agency's out-patient dental care program, and probably its dental research and education operations as well.

Another milestone was the establishment of the Armed Forces Medical Policy Council by Secretary of Defense George C. Marshall. President Truman's expression of determination to have Congress authorize Federal financial aid to the nation's dental and medical schools also attracted wide attention, as did the opening of Senate committee hearings on adequacy of the country's military and professional manpower and announcement of the government's intentions to amend the so-called doctor-draft law.

VETERANS ADMINISTRATION

It is still conjectural whether appointment of Rear Adm. Joel T. Boone (MC) USN, Ret., as successor to Dr. Magnuson in charge of VA's Department of Medicine and Surgery will result in policy changes bearing directly on dental services. During the three-year Magnuson regime, there was no concealment of the dental department's dissatisfaction over subordination of its research and education activities to medical control. This has an ironic twist, since the difficulties between Dr. Magnuson and Administrator Gray centered entirely around the former's contention that the administrator insisted upon lay, rather than professional, control of the huge medical, dental and hospital system.

In any case, no extraordinary change is anticipated in the VA fee-for-service out-patient dental care program for the fiscal year beginning July 1, 1951, according to the proposed budget submitted to Congress on January 15. Examinations by private dentists will total an estimated 207,950 during the coming year, compared with approximately 187,500 for the current fiscal year. Dental treatments by private practitioners are estimated at 355,260 for 1951-52, compared with 282,000 for the 12-month period July, 1950 to June, 1951. Above figures are exclusive of a projected 408,000 examinations and treatments to be performed in VA facilities next year, representing a 2 per cent increase in this particular out-patient load.

U. S. PUBLIC HEALTH SERVICE BUDGET

Transmittal of the 1951-52 budget also revealed a sizable reduction in funds for dental health activities of U.S. Public Health Service. The White House approved $1,750,000, compared with current year's appropriations of $2,090,000. More than one-half the total, $943,650, is earmarked for technical assistance to the states; $337,750 for National Dental Research Institute scientific studies; $271,000 for research grants and fellow-

ships; $125,000 for coordination and development of dental resources, and the remainder for miscellaneous and administrative expenses. No provision has been made for construction of a building for the research institute, which will continue to share space at suburban Bethesda, Md., with other components of the National Institutes of Health.

ARMED FORCES MEDICAL COUNCIL

At this writing, Secretary of Defense Marshall has not yet announced whom he will appoint to the three civilian posts on the new Armed Forces Medical Council. It is certain, however, that dentistry will be represented on the group. In all likelihood, that representative will be James P. Hollers, of San Antonio, Texas. The other two will be doctors of medicine. In establishing this Council, Secretary Marshall abolished the Cooper advisory committee, which had a larger civilian membership. Sole members of the new group, which has been given broad powers in shaping military medical and dental policies, are the three service Surgeons General, the three civilians and Richard L. Meiling, chairman.

HEALTH IN THE DEFENSE EFFORT

Meantime, on Capitol Hill, impetus has been given to pending legislation on Federal support of medical, dental and nursing education by President Truman's request that it be enacted in the interest of national defense. The Chief Executive gave it a "must" label in his "State of the Union" message and in his budget message a week later he stated: "If we are to meet successfully the challenge that confronts this nation, we can less than ever afford to waste the good health of our people. But the present emergency makes even more difficult the maintenance of good health. Our chronic shortage of physicians, dentists and nurses will be aggravated as more of them are called into the armed forces. Therefore, we need, more than ever, prompt enactment of legislation that will help to increase enrollment in medical and related schools, by assisting them to meet their costs of instruction and to construct additional facilities where needed."

On this subject of professional training and its high costs, a salient point is that the Division of Dental Resources in U.S. Public Health Service has scheduled March 1 as tentative launching date for a comprehensive study of the financial structures of the country's dental schools. The investigation will be under the auspices of the American Dental Association and the American Association of Dental Schools. Representing these groups on a supervisory council are the following dental deans: J. Ben Robinson, University of Maryland; Gerald D. Timmons, Temple University; Robert W. McNulty, University of Southern California; Maynard K. Hine, Indiana University, and Otto Brandhorst, Washington University of St. Louis. The group was scheduled to meet in Chicago January 30 to discuss contents of questionnaire forms and perfect other arrangements.

LEGISLATION

As for Congressional legislation, the first two weeks of the new 82nd Congress witnessed introduction of several thousand bills but no forward movement on any measures pertaining directly to dentistry. This was due, in part, to delay in organization of Senate and House committees. Senate Labor and Public Welfare Committee, which handles virtually all general health legislation, will have Sen. James E. Murray (D., Mont.) as chairman. New members are Sen. Irving M. Ives (R., N.Y.), Sen. Richard M. Nixon (R., Calif.), and Sen. John O. Pastore (D., R.I.).

Armed Forces

NEW POLICY INCREASES CIVILIAN AUTHORITY IN DEFENSE PROGRAM: LAST GROUPS OF DENTISTS REGISTER: 18-YEAR-OLDS MAY BE DRAFTED

Recent developments in the national defense program include the delegation to civilian advisory committees to Selective Service of authority to determine availability of dentists for military service based on their essentiality in their communities; the coordination under civilian leadership of three top military and civilian offices in Washington; and the registration with Selective Service of dentists under 50 years of age not already registered under the provisions of Public Law 779. At the time of going to press, a proposal to draft 18-year-olds was being presented to Congress.

NEW POLICY COUNCIL BRINGS MILITARY-CIVILIAN COORDINATION

A new Armed Forces Medical Policy Council has been created by Secretary of Defense Marshall, to be the principal agency of the Department of Defense for medical and health services and to replace the old "Cooper Committee." The Council combines in one organization the leadership of both military and civilian health authorities under a civilian chairman, and incorporates into a single organization the former Office of Medical Services, Department of Defense; Armed Forces Medical Advisory Committee; and the Military Medical Advisory Committee.

Chairman of the Council is Richard L. Meiling, who headed the old Office of Medical Services. Membership of the committee will consist of the three Surgeons General, and three civilian members to be "selected from among national authorities in medical and health fields of endeavor," according to Secretary Marshall's order. Announcement was expected of the appointment of James P. Hollers of San Antonio, Texas, as the dental member.

ADVISORY COMMITTEES GIVEN BROADER RESPONSIBILITY

Under a Defense Department policy to take effect not later than April 1, local and state committees of the National Advisory Committee to the Selective Service System will determine the availability of physicians and dentists being called to military service. This determination will be based on the need for retaining individual physicians and dentists in their own communities for essential health services. Constituent societies and dental members of state advisory committees will receive informational material from the Association to aid them in their operation.

The policy applies to the call-up of selectees and reserve officers other than members of the Organized Reserves, but when a reserve officer is declared essential by the committee yet is urgently needed by a military department, final decision rests with the Secretary of Defense.

The new plan provides also for submission of requirements of the Armed Forces to the Health Resources Committee of the National Security Resources Board for comment. Membership of the Health Resources Advisory Committee is identical with that of the National Advisory Committee to Selective Service. Howard A. Rusk of New York is chairman of both committees.

According to Dr. Meiling, who commended the plan, ". . . military requirements can be met without jeopardizing such civil defense plans or the other essential health services in our communities in time of emergency provided there is continued coordination of planning at both national and local levels."

SELECTIVE SERVICE REGISTERS SECOND GROUP OF DENTISTS

All dentists under 50 years of age who are not reserve officers, and did not register October 15, registered with Selective Service January 15. The group included Priority III, those who had no military service, and Priority IV, those with military service.

Although on December 26 the Army requested 850 dentists by March 15 from the pool of professional men trained at Government expense during World War II and who served less than ninety days of active duty, it was expected that the quota would be filled from volunteer reserves.

Nevertheless, according to Dr. Meiling, practically all dentists classified 1-A in the October 15 registration will be called to active duty by July 1. The group includes 2,000 ASTP and V-12 trainees with less than 90 days active duty. In addition there are the dentists temporarily classified 1-B while they complete residency training.

The 1,500 Priority II dentists are next on the list for call to service. They include dentists who were ASTP and V-12 trainees or were deferred for professional training during the War and who had less than 21 months of active duty.

18-YEAR-OLD BOYS MAY BE DRAFTED

Four hundred and fifty thousand 18-year-old youths could be drafted this year, if Congress approves enactment of a universal military service and training program submitted to a Senate armed forces subcommittee January 10 by Secretary of Defense Marshall and his assistant secretary, Anna M. Rosenberg. The program calls for 27 months of service and training. According to Mrs. Rosenberg, the 18-year-olds would get four to six months of training during which they would receive $30 a month pay, and would then go into service at the same pay as other members of the forces. The program was to be introduced into Congress January 17.

Under the present Selective Service Act, only men 19 through 25 can be drafted, although 18-year-olds are required to register. The law limits draft service to 21 months.

REAR ADMIRAL PUGH SUCCEEDS SWANSON IN TOP NAVY POST

Rear Admiral H. L. Pugh, deputy surgeon general of the Navy, has been nominated Surgeon General of the Navy to succeed Rear Admiral C. A. Swanson whose term has expired.

H. L. Pugh

Before his appointment in 1946 by President Truman as deputy and assistant chief of the Bureau of Medicine and Surgery, Navy Department, with his present rank, the Rear Admiral served the Naval Medical Corps for 23 years in many capacities on hospital ships, at naval hospitals, naval training stations and mobile base hospitals at home and overseas, and in 1942 he became chief of surgical service at the Naval Hospital, Pearl Harbor.

His World War II career also included command of the Naval Medical School in Bethesda which he assumed in 1944, and the assignment as chief of surgery in the Naval Hospital, Bethesda.

Among the nine military awards he has received is the Commendation Ribbon he is authorized to wear for his services as chief of surgical service at the San Diego Naval Hospital 1942-44. During this service the hospital's patient census reached 12,008, believed to be the largest in the world.

KENNEDY REPLACES FOSTER ON IOWA ADVISORY COMMITTEE

Joseph B. Kennedy of Des Moines, Iowa, has been appointed dental member of the State Advisory Committee to Selective Service, to replace C. S. Foster of Cedar Rapids who resigned.

ARMY DENTAL CLINIC TREATS U.N. SOLDIERS IN COMBAT

Men of the First Cavalry Division's portable dental clinic, who claim theirs is the first American unit in Korea to give dental care to other United Nations forces, examined 9,900 patient in their first four months in Korea while following close behind combat troops at Po-Hang-Dong, Kumchon and Taegu.

According to Lt. Col. Lee D. Barth of Winona, Minn., division dental surgeon and officer in charge of the unit, they extracted 1,724 teeth, installed 317 prosthetic appliances and 5 bridges, adjusted 450 dentures, placed 1,750 restorations, and performed dental surgery on over 150 cases.

Maj. Wendell T. Jackson, division prosthetic officer from Omaha, stated that as an expedient measure, impressions are taken of the mouths of patients needing extractions, so that work can be begun on replacements even before the extraction takes place. By this means, he says, front line cavalrymen get immediate dental service on extractions and are back in the lines in 24 hours or within a maximum of two days.

Another accomplishment of the laboratory is the acrylic finger stall made by an impression process to replace the time-honored tongue-depressor splint for broken fingers. Major Jackson and Capt. Alexander L. Sadowski, dental surgeon from Greenwood, Del., working together on the project, explained that this is an extracurricular activity for the dental laboratory and that they hope for few broken fingers in the division.

Colonel Barth attributes the efficiency of his small clinic to his four officers who, in addition to Major Jackson and Captain Sadowski, include Maj. Arch Fletcher, his executive officer doubling as a dental surgeon, and Lieut. Stanley L. J. Ardziejewski, dental surgeon from Detroit. Twelve enlisted technicians supervised by four sergeants complete the unit. (Pictures on page 228.)

MAJOR CARIUS OF ILLINOIS KILLED IN ACTION IN KOREA

First announcement of the death of a dentist and member of the Association in the Korea fighting came January 4, when it was learned that Maj. Marvin W. Carius of Morton, Ill., was killed in action December 9.

Major Carius became famous among GI's in Korea for fabricating dentures under fire. In Korea since shortly after the start of the fighting, he followed soldiers up to the front lines in a truck which he and two other members of the 24th Infantry Division had converted into a dental office and laboratory, and for which he was honored by an article in the GI newspaper, *Stars and Stripes*.

Major Carius, 1946 graduate of the University of Illinois College of Dentistry, had selected Army service as a career. He was a life member of Delta Sigma Delta and was president of the

Rho chapter in his last year at the University.

He is survived by his wife and two children.

Association Affairs

ASSOCIATION NAMES ADVERTISING REPRESENTATIVE

The appointment of George F. Penny as eastern advertising representative for all publications of the Association, including THE JOURNAL, has been announced by John J. Hollister, business manager. Mr. Penny, who assumed his new duties January 2, has offices at 516 Fifth Avenue, New York, and will serve advertisers in New York, New England, New Jersey, Pennsylvania, Maryland, Virginia, West Virginia, Ohio, and the city of Detroit.

Mr. Penny, who has spent sixteen years working in the dental field, was formerly director of new product and clinical research at Cook-Waite Laboratories, New York and, before three and a half years Army service during World War II, served that firm as advertising manager.

EMERGENCY DENTAL SERVICE COMMITTEE MEETS IN CHICAGO

The Committee on Emergency Dental Service of the Association met January 15 in the Central Office and discussed various problems in connection with the current emergency. The Committee's recommendations will be made to the Board of Trustees for consideration at the next meeting.

COUNCILS AND TRUSTEES TO MEET IN CENTRAL OFFICE

Council meetings scheduled for February are: Council on Scientific Session, February 5; Council on Dental Education, February 1-2; National Board of Dental Examiners, February 6; Council on Relief, February 4-5; Council on Dental Health, February 2-3; Council on Dental

Former presidents of the American Dental Association met at a special luncheon October 31, 1950, during the ninety-first annual session in Atlantic City. Posing here for the photographer are (l. to r.) Clyde E. Minges of Rocky Mount, N.C., 1948-49; Harvey B. Washburn of St. Paul, 1947-48; C. Raymond Wells of Brooklyn, 1943-44; J. Ben Robinson of Baltimore, 1942-43; Oren A. Oliver of Nashville, Tenn., 1941-42; C. Willard Camalier of Washington, D.C., 1937-38; and LeRoy S. Miner of Boston, 1936-37.

Other living members of the Past Presidents Club are Homer C. Brown of Columbus, Ohio, 1913-14; Thomas B. Hartzell of Minneapolis, 1921-22; Henry L. Banzhaf of Milwaukee, 1926-27; Roscoe H. Volland of Iowa City, 1927-28; Frank M. Casto of La Jolla, Calif., 1934-35; Marcus L. Ward of Ann Arbor, Mich., 1938-39; Arthur H. Merritt of New York, 1939-40; Walter H. Scherer of Houston, Tex., 1944-45-46; Sterling V. Mead of Washington, D.C., 1946-47; and Philip E. Adams of Boston, 1949-50.

Museum and Registry, February 5; Council on Membership, February 3.

The Board of Trustees of the Association will hold its annual mid-year meeting March 19-20 at the Central Office.

INDEXES AVAILABLE FOR J.A.D.A. & J.O.S. VOLUMES

Indexes for volume 41 of THE JOURNAL and volume 8 of *Journal of Oral Surgery*, 1950 volumes of the Association's publications, are now available. Copies may be obtained from the Order Department, American Dental Association, 222 East Superior Street, Chicago 11.

ASSOCIATION AIDS NSRB WITH LIST OF POTENTIAL TEACHERS

The Council on Dental Education is compiling a list of dentists holding internships and residencies in hospitals with Association approved training programs, as the result of the need by National Security Resources Board and other interested organizations for information regarding the distribution of potential dental teachers.

PROGRAM FOR ACCREDITATION OF HYGIENE SCHOOLS ADVANCES

Another step toward an accreditation program for dental hygiene schools was taken last month by the Council on Dental Education, when it mailed questionnaires to collect information regarding skills and abilities required of a graduate dental hygienist. Nearly 1,000 questionnaires were sent to deans of dental schools, directors of hygiene schools, dentists who employ hygienists, practicing hygienists, and hospital and public health directors.

Dental Societies

STATE SOCIETY FEE SURVEYS AIDED BY CENTRAL OFFICE

State dental societies, which are beginning a survey of dental fees to meet the increasing need for such information in connection with governmental, voluntary and philanthropic dental programs, are being aided in this project by a questionnaire prepared by the Bureau of Economic Research and Statistics.

The questionnaire covers virtually all dental services. By filling it out and returning it to his state dental society, the dentist, without disclosing his name, may make a significant contribution to basic economic information about his profession. Information derived from the survey will be used only for the compilation of statistics. No information from a single questionnaire will be released since results will be tabulated only on a group basis.

R. S. SCHLOSSER, MARYLAND PRESIDENT, DIES DEC. 21

Maryland dentists lost a friend and a great leader when Roger S. Schlosser, president of the Maryland State Dental Association, died in Baltimore December 21 after a short illness. The third of three generations of dentists in his family to practice in Hagerstown, Dr. Schlosser was a 1914 graduate of the Baltimore College of Dental Surgery. His career had included the presidency of the Washington County Dental Association and culminated with his election to the presidency of the state dental association an office which he took last May.

The vice-president of the State Association, H. Ralph Williams of Cumberland will assume Dr. Schlosser's presidential duties until the annual convention in May when the president-elect, C. L. Inman of Baltimore, will be installed.

The Western Fairfield County Dental Society, Connecticut, has donated $1,200 to the Fones School of Dental Hygiene of the University of Bridgeport. Shown here (l.) presenting the check to the president of the University, James H. Halsey, is Francis A. Haugh of Stamford, president of the Society. Robert H. W. Strang (r.), director of the Fones School, said that the check would be used to cover the cost of a newly installed dental unit in the clinic.

The Fones School of Dental Hygiene, a division of the Junior College of Connecticut, was established in September 1949 in honor of the late Alfred C. Fones, founder of the dental hygiene movement. Dr. Fones was the first chairman of the Board of Trustees of the University of Bridgeport.

Dental Education

MARCH 20 IS DEADLINE FOR APTITUDE TEST APPLICATIONS

Applications for aptitude testing of persons wishing to enter the 1951 freshman classes of dental schools must reach the Central Office not later than March 20 to be in time for the last testing period late that month, according to Shailer A. Peterson, secretary of the Council on Dental Education of the Association. Tests will also be held during February.

By January 1, of 4,500 persons applying to dental schools for admission in 1951 and certified for aptitude testing, about 2,600 had been tested. A total of 7,047 certifications had been issued, since many applicants apply for admission to several schools.

LYONS ASSUMES DEAN'S POST AT MEDICAL COLLEGE OF VIRGINIA

Dr. Lyons, whose appointment as dean of the School of Dentistry, Medical College of Virginia, was announced in late December, retired from private practice and assumed his new duties January 1. His appointment is the culmination of 32 years' association with the Medical College of Virginia, which he entered first in 1919 as a dental student. After graduation in 1923, he was appointed to the dental faculty on a full-time basis. From 1928 until his present appointment, he served the faculty on a part-time basis while engaged in private practice.

Dr. Lyons has been a member of the Council on Dental Therapeutics of the

Association since 1935 and served also for four years on the Nomenclature Committee of which he was chairman. For many years he has been a delegate from the Virginia State Dental Association, of which he is a past president, to the House of Delegates of the Association.

Harry Lyons

He is chairman of the committee on education of the American College of Dentists, and was for three years chairman of the nomenclature committee of the American Academy of Periodontology. He holds membership in the International Association for Dental Research, Omicron Kappa Upsilon honorary dental society, and Sigma Zeta.

ASSOCIATION OF DENTAL SCHOOLS TO MEET IN MARCH

The American Association of Dental Schools will meet at French Lick Springs, Ind., March 19-21. Details may be obtained from the secretary, Marion W. McCrea, Baltimore College of Dental Surgery, University of Maryland, Baltimore 1.

GEORGETOWN ANNOUNCES POSTGRADUATE PROGRAM

Georgetown University School of Dentistry launched a series of postgraduate courses in January with a course on full denture prosthesis by A. H. Grunewald, executive officer of the U.S. Naval Dental School. The 54-hour course will be repeated beginning March 19. Enrollment is limited to ten and tuition is $350.

Two 18-hour courses on differential diagnosis of oral tumors and mouth diseases are scheduled to begin March 12 and April 12. They will be conducted by Joseph L. Bernier of the Armed Forces Institute of Pathology, assisted by Lester R. Cahn, professor of oral pathology at Columbia University School of Dentistry, and Gustav O. Kruger, professor of oral surgery at Georgetown. Enrollment is limited to 50 for each course and tuition is $100.

The second of two 18-hour courses in dental therapeutics and prescription writing to be conducted by Charles F. Morgan, professor of physiology at Georgetown University Schools of Dentistry and Medicine begins March 19. Enrollment is limited to 50 and tuition is $100.

A 32-hour course in public speaking also starts March 19. To be conducted by George Perry, M.A., of the department of speech at Georgetown University College of Arts and Sciences, the course is designed to meet the needs of the professional man. Enrollment is limited to 15 and tuition is $75.

Seven 30-hour advanced courses in airbrasive technic will be conducted by John P. Burke, chairman of the postgraduate committee; Maurice A. Goldberg, professor of dental materials and director of the department; Kenneth M. Broesamle, chief of the airbrasive section of U.S. Naval Dental School; Charles B. Murto, director of clinics and professor of crown and bridge, and Robert J. Fuire, chief resident in pathology at Georgetown University Medical Center. The courses begin February 12, February 26, March 19, April 2, April 16, April 30 and May 14. Enrollment is limited to 10 and tuition is $150.

A course on crown and bridge and inlay will begin March 19, conducted by John A. O'Keefe of Washington, D.C.

Enrollment is limited to 20 and tuition is $300.

Applications should be addressed to the registrar, Georgetown University School of Dentistry, 3900 Reservoir Road, Washington 7, D.C.

SAN FRANCISCO COLLEGE OF P. & S. OFFERS COURSES

The College of Physicians and Surgeons of San Francisco has announced 19 refresher courses in three general subjects for the academic years 1951-52 and 1952-53. Others will be announced later, according to the director of refresher and postgraduate courses, Charles A. Sweet, Sr.

Three courses in cavity preparation and precision casting, directed by Alver Selberg, clinical professor in prosthetic dentistry, with the assistance of Henry R. Spencer, clinical instructor in prosthetic dentistry, are scheduled for September 17-21, 1951; and March 17-21 and June 16-22, 1952. Tuition is $100 and enrollment in each course is limited to seven.

Eight courses in dentistry for children, directed by Charles A. Sweet, Sr., associate professor of operative dentistry (dentistry for children), are scheduled for October 1-10, October 29-November 7, and December 10-18, 1951; and January 7-16; February 25-March 5, April 1-9, May 5-14 and June 2-11, 1952. Tuition is $85 and enrollment in each course is limited to ten.

Eight courses in tooth guidance (preventive orthodontics), directed by F. T. West, clinical professor of orthodontics, are scheduled for September 24-29 and November 26-December 1, 1951; January 21-26, May 19-26, September 22-27, and November 17-22, 1952; and January 19-24 and May 18-23, 1953. Tuition is $75 and enrollment is limited to five dentists who have completed the refresher course in dentistry for children.

Applications should be sent to the dean, Ernest G. Sloman, College of Physicians and Surgeons of San Francisco, A School of Dentistry, 344 Fourteenth Street, San Francisco 3.

Public Health

PELTON TAKES RESOURCES POST WITH USPHS

Walter J. Pelton has been appointed chief of the dental resources division in U.S. Public Health Service Bureau of Medical Services, succeeding James F. Lewis who has been assigned to Chicago as dental consultant for Regions IV and V, the post formerly held by Dr. Pelton. Dr. Pelton, who is a graduate of Western Reserve Dental School and holds an M.S. degree in public health from the University of Michigan, had previously been dental consultant for U.S.P.H.S. in Denver. He assumed his new duties December 1.

CHILDREN'S DENTAL HEALTH DAY IN AKRON AND CLEVELAND

Among plans for nationwide observance of Children's Dental Health Day this month are two interesting ones in Ohio, where both the Cleveland and the Akron Dental Societies have arranged lay education programs.

In Cleveland the two-day program will be initiated with a special Quiz Kid broadcast over a national hook-up February 4, during the Society's "Children's Dental Party," before an audience of 3,000 in the Public Auditorium. A professional program will be held at the Hollenden Hotel February 5, to which mem-

bers of the Association are invited. The program will consist of postgraduate courses and panel discussions lasting from 9 A.M. to 9:15 P.M. Early registration by mail is urged for the professional program since attendance will be limited.

The Cleveland Society is observing the occasion for the eleventh succeeding year, and is credited with having played an important part in starting the machinery for the annual national observance.

In Akron, a week-long program has been arranged to start February 12 in order to avoid conflict with the Chicago Dental Society Midwinter Meeting. Newspaper publicity and a poster contest for school children are preceding the event. A guest essayist, Alfred E. Seyler of Detroit, will appear on radio broadcasts, before the Parent-Teacher Association, and at a dinner meeting of the Akron Dental Society. A 15-minute broadcast by Dr. Seyler will be channeled to classrooms in the public schools and a tape recording will be made for an evening program. Prizewinners in the poster contest will receive their awards at the meeting of the Akron Dental Society.

NATIONWIDE REQUESTS RESULT IN ASSOCIATION BOOKLET ON FLUORIDATION. NEW WISCONSIN FIGURES REPORTED

On the heels of approval by various health organizations of fluoridation of community water supplies as a measure of partial control of dental caries, both the Association and the U.S. Public Health Service report the receipt of hundreds of inquiries regarding the procedure, its cost, methods and equipment, from cities contemplating its installation.

COUNCIL'S BOOKLET WILL ANSWER QUESTIONS

As a result of the requests received by the Association, the Council on Dental Health has prepared a booklet on water fluoridation which can be obtained on request from the Central Office. The booklet, which will be ready for distribution early this month, gives a brief background of earlier fluoride studies, a summary of the scientific basis for the adoption of fluoridation, a list of national organizations that have approved it, a description of technical procedures, installation and cost, and a list of firms from which the equipment and materials can be purchased.

USPHS CHIEF SUMMARIZES FLUORIDATION STATUS

In the meantime, Bruce D. Forsyth, assistant surgeon general and chief dental officer of U.S. Public Health Service, summarizing the present status of water fluoridation, stated that "it is now accepted as the most logical preventive measure for the partial control of dental caries for population groups to whom communal water supplies are available." He reported that approving statements had been issued by the American Dental Association, Association of State and Territorial Dental Health Directors, American Public Health Association, State and Territorial Health Officers, and American Water Works Association, as well as the U.S. Public Health Service.

WISCONSIN LEADS WITH 48 COMMUNITIES SUPPLIED

Wisconsin apparently leads the rest of the country with 37 cities supplying fluoridated water to 48 communities. G. J. Hildebrand, Sheboygan City Health Commissioner, reports that in Sheboygan,

where sodium fluoride is used as the fluoridating agent, studies carried out by A. H. Finke, city dentist, and F. A. Bull, dental director of the Wisconsin State Board of Health, have shown a 21.8 per cent reduction in caries attack rate for permanent teeth in the seventh to ninth grades. At the fourth-grade level, the caries attack rate for permanent teeth has been reduced 31.3 per cent, and for the deciduous teeth at kindergarten age, the caries attack rate has been reduced 46.2 per cent, it is reported. The fluoride content of the Sheboygan water supply is maintained at 1.2 ppm, and does not vary over one-tenth of one part per million. The cost is said to be approximately 10 cents per capita annually.

An additional 42 Wisconsin cities are reported to be installing water fluoridation equipment.

REPORTS FROM EAST TO WEST

Reports received include one from New England, in which New Britain claims to be the first Connecticut city to adopt the procedure. DeKalb County in Georgia is believed to be the first area in that state. The Sheridan Dental Society is reported to have been instrumental in obtaining city approval from the first fluoridation project in Wyoming. The Portland District Dental Society in Oregon has approved the procedure, and the municipal government has approved it in Baltimore. In Hawaii, also, the Honolulu County Dental Society has registered its approval.

Veterans Administration

SPRING TERM LAST CHANCE FOR ENROLLMENT UNDER GI BILL FOR VETERANS DISCHARGED BEFORE JULY 25, 1947

World War II veterans discharged from service before July 25, 1947, were reminded in late December by Veterans Administration that if they are planning training under the GI Bill and have not yet started, the spring term is their last chance to enroll since July 25 is the cut-off date. However, veterans discharged after July 25, 1947, have four years from their date of discharge in which to begin training.

CHANGING FIELDS OF STUDY MADE MORE DIFFICULT

After the July 25 deadline, trainees may not change their fields of study merely by application, as was allowed under Public Law 610, but "only while in training and then for reasons satisfactory to the administrator."

WITH FEW EXCEPTIONS TRAINING MUST BE CONTINUOUS

Furthermore, veterans must pursue their training "continuously until completion, except for conditions which normally would cause interruption by any student." In this connection, four categories of veteran-trainees will be given special consideration: (1) veterans whose GI Bill studies were interrupted by a return to active service; (2) veterans who completed predental training and are unable to obtain admission to a dental school by deadline time; (3) teachers who spend summers taking training leading to a degree; and (4) those who complete GI Bill undergraduate courses and intend to do graduate work starting after the deadline date. Veterans in this last group

must apply for advanced training before they complete their graduate work.

JULY 1956 IS WIND-UP DATE

VA emphasized that most veterans may not receive training after July 25, 1956, the wind-up date of the program. However, those who enlisted or reenlisted between October 6, 1945, and October 5, 1946, have four years from the end of their period of service in which to begin GI Bill training, and nine years from the end of that period in which to finish.

BOONE REPLACES MAGNUSON AS VA MEDICAL CHIEF JAN. 15

Vice Admiral Joel T. Boone, retired naval officer and former White House physician to Presidents Harding, Coolidge and Hoover, was appointed chief medical director of Veterans Administration on January 15, to replace Carl Magnuson. Although Carl R. Gray, Jr., VA administrator who announced the appointment, said that Dr. Magnuson's "previously presented resignation" had been accepted, Dr. Magnuson was quoted as saying that he was dismissed. Admiral Boone will take office by April 1. In the interim, Arden Freer, assistant chief medical director, will serve as acting chief.

Research

ORTHODONTISTS OFFER PLACES ON APRIL RESEARCH PROGRAM

The American Association of Orthodontists invites participation in its session for the presentation of research papers to be held April 23 in Louisville, Ky., at the Seelbach Hotel. Members of that association as well as teachers, research workers, undergraduate students and others affiliated with recognized dental institutions who would like to participate in the program are asked to submit an abstract not exceeding 50 words, the exact name of the paper and the name of the institution in which the work was done, to J. A. Salzmann, 654 Madison Avenue, New York 21.

ILLINOIS OFFERS RESEARCH FELLOWSHIPS IN DENTISTRY

Ten fellowships offered by the Graduate School of the University of Illinois offer opportunity to graduates in medicine, dentistry and pharmacy for research experience in the basic sciences and the application of these sciences to clinical investigation. Stipends of $1,800 to $2,400 are available with a maximum of $3,000 for unusually well qualified applicants. Registration for work toward M.S. or Ph.D. degrees will be required of appointees but tuition fees will be waived.

Although applicants need not have completed clinical internships, they must have a bachelor's degree and show evidence of scholarship and promise of research ability.

Applications must be received by February 15 and selections will be announced April 1, 1951. Forms may be obtained from the associate dean of the Graduate College, University of Illinois, 808 S. Wood Street, Chicago 12.

BIBBY AND CO-WORKERS TO RECEIVE $500 ESSAY AWARD

The Chicago Dental Society $500 prize essay award has been won by Basil G. Bibby, Hyman J. V. Goldberg and Eugene Chen of the Eastman Dental Dispensary, for their essay on "Evaluation of Caries-Producing Potentialities of Various Foodstuffs."

The essay will be read at the 86th midwinter meeting of the Chicago Dental Society February 5-8, when Arno L. Brett, president of the Society, will present the award.

Legislation

TRUMAN STRESSES NEED FOR HEALTHY POPULATION: AID TO DENTAL SCHOOLS AND COMPULSORY HEALTH INSURANCE AGAIN BEFORE CONGRESS

In his report on the "State of the Union" and in his later message to the 82nd Congress, President Truman emphasized the necessity for a healthy population in the defense effort, and said that the first step is to increase the number of professional personnel and auxiliaries in the health field. Again in his budget message he stressed the necessity of increasing the pool of physicians, dentists and nurses through aid to professional schools and by providing Federal funds for establishment of local public health units where they do not exist.

AID TO DENTAL SCHOOLS

First bill of the new Congress on Federal aid to medical and dental schools is S 337, filed by the seven Democratic members of the Senate Labor and Public Welfare Committee. Similar to S 1453 passed by the Senate during the 81st Congress, the new bill is tied to the national emergency and authorizes $25,000,000 annually for construction and equipment. A similar bill which does not encompass assistance to schools of dentistry is expected to be presented by Rep. M. G. Burnside (D., W. Va.).

NATIONAL HEALTH INSURANCE

Two national health insurance bills, HR 27 and HR 54 were introduced into the House by Rep. Emanuel Celler (D., N.Y.) and Rep. John D. Dingell (D., Mich.) respectively, and are virtually the same as the Murray-Wagner-Dingell bill of last year. Health provisions are identical but HR 54 includes aid to dental and medical education and hospital construction.

ARMY DENTAL BILL

The Army Dental Bill sponsored by the Association again was introduced into Congress, HR 164 by Rep. Walter E. Brehm (R., Ohio) and HR 344 by Rep. L. Mendel Rivers (D., S.C.). The bill provides for improved dental care for Army personnel by giving the dental chief more control over dental affairs including the assignment and distribution of dental personnel and auxiliary personnel (dental technicians).

SEVEN MILLION EARMARKED FOR ARMED FORCES INSTITUTE

Among urgent bills passed by the 81st Congress in December was one providing $8,663,000 for medical department construction purposes, including more than $7,000,000 for construction of the Armed Forces Institute of Pathology. It was believed that this item was considered necessary for military purposes.

FALSE CLAIMS FOR ViViBx BRING $1,000 COURT FINE

False claims in price lists and misbranding of vitamin products distributed by International Pharmaceutical Co., Chicago, cost the company and its president a $1,000 fine plus costs as the result of court action instigated by the Food and Drug Administration of Federal Security Agency in the Northern District of Illinois late last year.

The charges branded as "false and misleading" statements in price lists accompanying vitamin products known as ViViBx, "since the articles would not be efficacious for the purposes represented

and suggested." Statements objected to were to the effect that various ViViBx products would be efficacious in the treatment of dental caries, glossitis and gingivitis, that they would be of value in the formation and preservation of tooth enamel and that they would counteract nutritional oral and tooth deficiencies as well as a number of medical conditions.

International

MARQUAND REPLACES BEVAN AS BRITISH MINISTER OF HEALTH

In a shift in the British Cabinet in January, Hilary Adair Marquand replaced Aneurin Bevan as health minister and the functions of the health ministry were reported to be severely curtailed with the new minister no longer sitting in the Cabinet.

Mr. Bevan has been named Minister of Labor and National Service, where he will have the key job in Britain's rearmament drive. Mr. Marquand's former post as Minister of Pensions has been given to George Isaacs, former Minister of Labor.

Like his predecessor, the new health minister is a Welsh laborite.

HENRI VILLAIN, F.D.I. LEADER, DIES IN PARIS

International dentistry lost one of its most distinguished leaders December 7 when Henri Villain, vice-president of the Fédération Dentaire Internationale and brother of the late George Villain, one of its founders, died in Paris at the age of 69.

Dr. Villain's life was spent furthering progress in dentistry, dental education, and public health in France and in other countries, and his influence as a friend and a preceptor extended far beyond the boundaries of his native land. In addition to the vice-presidency of the F.D.I., of which he was one of the early members, he held honorary membership in dental organizations in several other countries and was president of the administrative council of the Dental School of Paris and president of the French Fédération Dentaire Nationale.

FRENCH STOMATOLOGY CONGRESS INVITES PARTICIPANTS

Plans are under way for the twelfth French Congress of Stomatology to be held in Paris in October. Dentists who wish to present papers are asked to write to the general secretary, P. Friez, 42 Rue Notre Dame des Champs, Paris 6.

I.A.D.R. TO MEET AT FRENCH LICK MARCH 17-19

The International Association for Dental Research will meet at the French Lick Hotel, French Lick Springs, Ind., March 17-19.

Information may be obtained from the secretary, Edward H. Hatton, 311 E. Chicago Avenue, Chicago Ill.

AMERICAN DENTAL SOCIETY OF EUROPE TO MEET IN AUGUST

The annual meeting of the American Dental Society of Europe will be held in Lausanne, Switzerland, August 1-4. Information may be obtained from the secretary, F. Douglas Derrick, 140 Park Lane, London, W.1.

PRICE OF INTERNATIONAL DENTAL JOURNAL IS $8.50

The new 164-page quarterly, *International Dental Journal,* published by the Fédération Dentaire Nationale, can be obtained for $8.50 per year from British Publications, Inc., 150 East 35th Street, New York. Subscription for members of the Fédération is $7.65. Canadian sub-

scription is $9.00 per year for nonmembers and $8.10 for members.

The figure quoted on page 724 of the December issue of THE JOURNAL was based on conversion of the British subscription price at the current rate of exchange and is incorrect.

General

CONGRESSMAN PAYS TRIBUTE TO TRENDLEY DEAN

H. Trendley Dean, director of the National Institute of Dental Research, Bethesda, Md., was honored by a tribute made in the House of Representatives December 19 by Rep. Melvin Price (D., Ill.) and appearing in the *Congressional Record* for that date. Representative Price stated that "no man has contributed more to raising the standards of dental health than has Dr. Dean," and referred to him as "the keyman in research which has led to the use of the fluoride process." He completed his remarks with the story of Dr. Dean's career.

DENTISTS "INVALUABLE" IN DEFENSE FIRST-AID STATIONS

Dentists could make an "invaluable contribution" in community first-aid stations set up as part of civilian defense, according to the Civil Defense Administration booklet, *Health Services and Special Weapons,* prepared by the Health Resources Office of the National Security Resources Board and released December 28. Most of the dentists in the community should be assigned to work in the first-aid stations, the booklet states, where they could treat shock, arrest hemorrhage, administer plasma, and perform similar lifesaving tasks.

It is recommended that during the initial stages of a disaster, dentists with hospital experience be included on the staffs of hospitals, both existing and improvised, to care for patients with maxillofacial injuries and to serve as anesthetists.

A second booklet, prepared by the National Security Resources Board and the Civil Defense Office, is entitled *"Survival Under Atomic Attack."* It contains a description of the dangers of the atomic bomb and the steps civilians can take to escape them.

Both booklets can be obtained from the U. S. Government Printing Office, Washington, D.C. The first, containing 280 pages, is priced at 60 cents a copy; the second is 10 cents a copy.

SOUTHERN ORAL SURGEONS TO HOLD ANNUAL MEETING

The Southern Academy of Oral Surgery will hold its first annual meeting and clinics March 24-25 in Atlanta, Ga., preceding the Thos. P. Hinman midwinter clinics. Information may be obtained by writing to the secretary, Robert H. Roux, Jr., 112 West Jones St., Savannah, Ga.

LIFE MAGAZINE PUBLISHES FOUR-PAGE CARIES ARTICLE

Life magazine devoted four pages of its January 8 issue to an article on dental caries illustrated with photographs and colored diagrams which show dramatically the cause of caries and mode of penetration of tooth structure, as well as recommended toothbrushing technic to aid in prevention. The article, prepared with the assistance of the Bureau of Public Information of the Association, includes colored diagrams of magnified sections of teeth which give visual aid to understanding. A photograph of the jaws of two rats, one fed a sugar-free diet and the other fed a diet containing refined sugar, illustrates the effect of sugar on caries production.

Lt. Col. Lee D. Barth of Winona, Minn., division dental surgeon and officer in charge of the First Cavalry Division's portable dental clinic, states that their small dental unit examined nearly 10,000 patients in four months and was the first to give dental care to United Nations forces besides Americans in Korea. Above, Colonel Barth (center), discusses the acrylic finger support with the division prosthetic officer, Maj. Wendell T. Jackson of Omaha (right), while Capt. Alexander L. Sadowski of Greenwood, Del., looks on. In the top insert, Lieut. Stanley L. J. Ardziejewski of Detroit loosens a bicuspid for extraction from Sgt. Ronald W. Snyder, cavalryman from West Dearborn, Mich. In center picture, left, Corporal William D. Cruise of Birmingham, Ala., checks the fit of a partial denture on an impression model. Lower picture shows Captain Sadowski demonstrating the proper use of the acrylic finger support on the hand of a clinic patient. (Story on page 216.)

WILLETT, WELL KNOWN PEORIA ORTHODONTIST, DIES AT 73

Raymond C. Willett, well known orthodontist of Peoria, Ill., died December 30 at the age of 73 after a few hours' illness. Dr. Willett, who had practiced his specialty in Peoria for 40 years, was an 1899 graduate of Washington University School of Dentistry, St. Louis, Mo., from which he later received an honorary doctorate in science. During his life of service to the profession, in which he gained international repute, he contributed generously to the literature, lectured widely, and look a leading part in establishing the dental department in the Peoria public schools.

His memberships in professional organizations included the American Dental Association, the Peoria District and Illinois State dental associations, the American Society of Orthodontists, and many other scientific and civic groups.

Dr. Willett is survived by his wife and daughter.

ILLEGAL PRACTICE COSTS TWO ARKANSANS $1500

A drug store manager and a dental technician in Little Rock, Arkansas, were fined a total of $1,500 in November after Federal grand jury indictment for using the mails to defraud and practicing dentistry without a license. They were ordered also to make refunds to dissatisfied customers.

The defendants, E. L. Olds and his nephew, Lawrence N. Robinson, were charged with selling an "amazing new discovery, a wonder-working drug to be classified with sulfa and penicillin," marketed by the BeCal Co., Division of the Yancey Laboratories, Inc. They were charged also with illegal use of the mails to send dentures to residents in Texas, Alabama and Illinois. Mail and radio advertising had stated that the dentures were of fine quality transparent materials made by an "amazing new and scientific process" guaranteed to save the patient money. The firm name of American Dental Co., 7th and Main Streets, Little Rock, was used.

D.C. DENTISTS WILL HOLD ANNUAL CLINIC IN MARCH

The nineteenth annual postgraduate clinic of the District of Columbia Dental Society will be held March 11-14 at the Shoreham Hotel, Washington, it is announced. Clinicians and the subjects of their one-day postgraduate courses are Stanley D. Tylman of Chicago, crown and bridge; J. Lewis Blas of New York, practice management; Herbert D. Coy of Richmond, Va., plastic fillings; Edward L. Ball of Paterson, N. J., periodontics; G. W. Matthews of Birmingham, Ala., exodontics; and the prosthetics staff of the U. S. Naval Dental School, Bethesda, Md., prosthetics.

Inquiries should be addressed to the executive secretary, Edward H. Steinberg, District of Columbia Dental Society, 1835 Eye Street N.W., Washington 6, D.C.

HINMAN MID-WINTER CLINIC TO BE HELD MARCH 25-28

The Thomas P. Hinman Mid-Winter Clinic will be held March 25-28 in Atlanta, Ga., it is announced, under the general chairmanship of Thad Morrison, Sr. Details may be obtained from the executive secretary, Dorothy Thurston, 1105 Doctors Building, 478 Peachtree Street, N.E., Atlanta, Ga.

NORTHEASTERN ORTHODONTISTS PLAN MARCH ANNUAL MEETING

The annual meeting of the Northeastern Society of Orthodontists will be held March 5-6 in New York at the Waldorf-Astoria Hotel.

Information may be obtained from the secretary, Oscar Johnson, 35 West 81st St., New York.

NEWS FROM GREAT BRITAIN

During the year 1950 it became increasingly evident that the National Health Service strengthened its claim to be an established part of the British way of life. This does not alter the fundamental criticisms and objections to this type of medical and dental care, but the Service is firmly established in the minds of the profession and the public.

COMPLAINTS OF PATIENTS

At the outset of the scheme many felt that the service was free. At least some part of the great demand for spectacles and dentures arose from the fear of some that they might lose their free gift if they did not apply immediately for benefits. Today few believe that they do not pay for the service. The deductions from the pay packet or monthly check amounting to nearly fifteen pounds per year are not fully appreciated when the ever increasing prices for food, clothing and other essentials make the balancing of the family budget a matter for careful planning. The fact that so many young married couples seek treatment under the Health Service points to the future. Once they are in the scheme it may be difficult to persuade them to leave it.

Dissatisfaction with the treatment that they have received under the Service is still expressed by many. Patients tend to blame the conditions created by the scheme rather than attach any particular blame to the practitioner. "Of course I realize that the scheme has made my dentist so busy that he cannot give me the time that I used to get as a private patient."

During the last six months there has been much less publicity than formerly on the large incomes that dentists were making from the Service. The few dentists who made headline incomes gave rise to the notion that all dentists were making fabulous incomes.

The 33 chairside hours per week, or 1,500 hours per year, recommended by the Spens Committee, passed out of existence in 1950. It is certain that the Government will not recognize the 1,500 hours as a fundamental fact in the preparation of the permanent scale of fees. Members of the profession have proved by their actions that they can work much longer hours but, as was forecast in the Spens Report, if longer hours are worked the sickness rate rises. Experience has proved this to be true.

COMPLAINTS OF DENTISTS

The majority of practitioners complain of the great burden of clerical work that has to be carried out. Although most dentists employ secretaries, they must have the clerical part of their practice well organized. The forms for extractions, dentures and routine conservation work take about a fortnight to be approved and returned. The special estimates for bridges, crowns, inlays, orthodontic treatment and minor oral surgery take about a month to return. The majority of criticisms of the scheme are leveled at the Dental Estimates Board. There is a feeling that much of the work there is done by the lay clerks and dentists are annoyed when estimates are amended, returned for resubmission, or not approved.

Recent regulations make it necessary to complete all conservation work within six months. As most dentists have been working on a three months appointment system,

the new ruling makes it almost impossible for them to complete all the work on hand in the required time. Consquently some dentists will not be paid for some services rendered. At present if conservation work is undertaken it must be completed; that is, all teeth that can be saved must be so treated before payment is authorized. Some patients prefer to have but one tooth filled and wish to leave the treatment of others to a later visit. This cannot be done, according to the regulations, for the dentist will not be able to claim a fee if he does not complete all the conservation work needed by the patient. Hence the desire for a so-called simplified emergency filling form.

SURVEY OF REGISTRARS

All medical and dental consultants have been reviewed during the past year and distinction awards made, although the results have not been announced.

The Ministry of Health has ordered a regional survey of the establishment of registrars in all hospitals and has recommended a reduction in the number of medical and dental registrars for each region. This cut has caused great unrest in the groups of trainee specialists. Many who seemed well set for a specialist's career will now be disappointed.

SCHOOL DENTAL SERVICE

The number of dentists in the School Dental Service is still far short of requirements and the service is floundering under difficulties. Just before Christmas the new salary scale for school medical officers was announced and it is not as high as was hoped. At present, school medical officers are paid fifty pounds more per year than school dental officers. If the new dental scale is fifty pounds less than the new scale for medical officers, the dentists are going to be disappointed. Certainly their income will not approach that of dentists in private practice. The New Zealand Report, which is favorable to the school dental nurses, has added to the fears in some quarters that the School Dental Service, as it was before World War II, is doomed.

John Boyes

The Reader Comments

THE JOURNAL *devotes this section to comment by readers on topics of current interest to dentistry. The editors reserve the right to edit all communications to fit available space and require that all letters be signed. Signatures will be deleted before publication at the request of the author. Printed communications do not necessarily reflect the opinion or official policy of the Association. Your participation in this section is invited.*

The Editor

TO THE MEMBERS OF THE DENTAL PROFESSION

For quite some time I have been experimenting with an idea to alleviate the pain or sensitivity in drilling cavities.

I have found that by placing mineral oil (U.S.P.) on the bur before drilling, or a drop of this oil in the cavity, much of the heat sensation is removed. Several hundred of my patients attest to this fact.

The use of the mineral oil helps to cut the usual heat caused by friction which excites the nerve fibrils to the extent of hurting the patient. Several oil dippings will be necessary to complete each drilling operation.

When finished with the drilling, the oil is removed with pledgets of cotton, and the cavity flushed with alcohol, followed by warm air blasts from the chip blower. Then the regular cavity and filling procedures can be pursued. Chloroform may also be used for cavity flushing.

Use only sharp burs. Very light pressure should be exerted in drilling. Heavy pressure definitely slows the bur and reduces cutting efficiency.

I am profoundly interested in this experiment, and would appreciate hearing your reaction to it, after testing it.

Charles A. Levinson, D.M.D., Boston

DEFENSE OF DR. GOLDMAN

I read the review of Goldman's *Periodontia* in the August issue of THE JOURNAL and wondered at the inept opinions of the reviewer. The review concerns itself with only a few of the 611 pages of the book.

It appears that the reviewer is not familiar with the prevailing trends in periodontal classification inasmuch as he objects to, and is confused by, the term "periodontosis." In the same issue of THE JOURNAL, two pages beyond the review in question, Schumaker voiced his approval of Boyle's revision of *Kronfeld's Histopathology of the Teeth and Their Surrounding Structures,* which uses a similar terminology, by the following statement: "The changes which have been made in nomenclature deserve creditable mention. This is particularly evident in the chapter on the pathology of the investing tissues where a change in the terminology makes for an improvement over the former edition."

The reviewer also criticizes the term "intrabony pocket" and states that it is unfortunate that reattachment in this type of pocket was suggested. Dr. Goldman's original article on the intrabony pocket was reviewed in the 1949 *Year Book of Dentistry,* the comment by the editor being "Goldman's claim that reattachment is possible after proper therapy of the intrabony pockets has a sound foundation in pathology. His illustrative cases appear to offer good clinical evidence. This article should offer encouragement to those who have been successfully treating intrabony pockets in the face of claims that reattachment is impossible and may give others the courage to attempt saving teeth that are amenable to treatment." The reviewer's skepticism concerning the existence of such an entity as the intrabony pocket is hardly understandable in the light of the fact that it was first described by Gottlieb about 25 years ago and since then has been repeatedly accepted by investigators in the field of periodontics.

The reviewer questions the procedure of removal of granulation tissue at the base of the pocket in the therapy of the intrabony pocket as follows: "Since the first healing would be expressed in the form of granulation tissue why remove it?" By the same token he might have asked why periodontal pockets are curetted since the granulation tissue and epithelium which are removed will form again and, in fact, it is desirable that they do form. Obviously if the reviewer understood that these tissues were removed because they were under-

going degeneration and necrosis, he would not have raised this question.

It is true that in elementary pathology the student is taught that the presence of round cells in a tissue denotes pathology. However, he has not progressed far beyond the basic stage before he learns that the presence of small numbers of inflammatory cells is a common occurrence in certain tissues and seemingly has no pathological significance.

Since small numbers of round cells have repeatedly been demonstrated in the clinically healthy gingivae, the reviewer must assume that all individuals have gingivitis should he regard the presence of these cells in the gingivae as definite pathology. Clinically, all indiyiduals do not have gingivitis.

It appears to me that the reviewer was not fitted to review this book.

Jack Bloom, D.D.S., Boston

REPLY TO DR. BLOOM

Dr. Bloom's rather interesting interpretation of my statement, as regards the question raised about the condition called periodontosis characterizes his whole discussion of the review of Goldman's book, *Periodontia*. Careful reading would have revealed the fact that I did not question the possibility of periodontosis either as a fact or as a suitable bit of nomenclature. I questioned only the facts that were purported to represent the condition called periodontosis.

Unfortunately trying to dignify the term "intrabony pocket" by bringing Gottlieb's worthy name into the picture does not change the fact that in a clinically live subject, in the absence of necrosis, no such condition exists. It should be clearly understood that the bone itself is not infected and not necrotic, hence an intrabony pocket exists only on the basis of radiographic inference. Once again all periodontal pockets consist of two surfaces, a soft tissue side, and a hard tissue side, the tooth.

If inflammation is defined as a physiologic reaction to an irritant, then removal of the irritant should resolve the condition. The discusser's suggestion that the granulations interposed between the base of the pocket and the bone must be removed because they are supposed to be undergoing degeneration and necrosis is interesting if not naive. The fact that teeth with apical rarefactions which contain so-called degenerating and necrotic elements will heal (bone regeneration) without curettage, if the irritant (the tooth) is removed unless, of course, epithelial proliferations are found therein, might give one pause for thought. Similarly, removal of the irritating contents of a root canal and filling thereof, is followed by regeneration of bone in previously radiographic-radiolucent zones. This substitution of hard connective tissues for soft is predicated on a program that does not destroy the so-called infected granulation tissue.

The subepithelial granulations related to the soft tissue of the periodontal pocket would be subject to a similar healing process if the pocket contents, plus deposits on the tooth roots were removed, if an additional program aimed at preventing their redeposition were undertaken. Curettage or separation of attachment would not be a prerequisite to such healing. The fact that tissues may be detached by curettage (infected or otherwise) and that they will heal (reattach) in spite thereof, does not prove that such a program need necessarily be followed to achieve repair or healing of tissues.

Inasmuch as deposits on root surfaces are located above the base of the pocket (including the so-called intrabony pocket) they can be separated from root surfaces without wholly separating the attachment of the epithelium or the connective tissue overlying the bone without resorting to curettage, it seems strange that tissues need be handicapped to this extent to achieve healing.

G. R. Lundquist, M.S., D.D.S., Chicago

Book Reviews

CLINICAL APPLICATION OF SUGGESTION AND HYPNOSIS

By W. T. Heron, Ph.D. 116 pages. Price $3. Springfield, Ill.: Charles C Thomas Company, 1950.

Any dentist who desires to keep informed on the modern technics in dentistry should read this little book carefully. While this volume is prepared for the professional use of all who are concerned with the clinical application of hypnosis it is of particular interest to dentists because it is a direct outgrowth of Dr. Heron's work with a large number of dentists who are now using hypnosis in a part of their daily practice.

Unfortunately hypnosis has not always enjoyed a good reputation largely because of the antics of certain showmen and the questionable behavior of charlatans. It is, therefore, a real delight to encounter a book that is sound and conservative and thoroughly scientific in its approach to this controversial subject. A thoughtful reading should convince anyone of the value of hypnosis when used by trained operators. It should also remove the feelings of distrust and opposition of those who have been prejudiced or simply ignorant of the subject.

This monograph is not intended to take the place of any of the more comprehensive books on the subject nor is it to be thought of simply as a "how to do it" book. It deals with principles of application and presumes that its users will be professional people with adequate backgrounds. It is not intended for general circulation. The fundamental principles of the application of suggestion are so simple that they can be applied by any intelligent person, but only those professionally trained have the necessary knowledge to treat patients.

"Physicians, dentists, and psychologists are in the position to do the most harm to their fellow men by an unfortunate suggestion inadvertently given. By the same token they can use this device to bring the greatest benefits."

The use of hypnosis for dental purposes by trained operators is a new development in which Dr. Heron has been one of the leaders. Dentists who desire to serve their patients better should make this volume a part of their library.

W. Hyde

PHYSICIANS' AND NURSES' CONCISE MEDICAL ENCYCLOPAEDIA

By William H. Kupper, M.D. 450 pages with illustrations. Index. Price $7.50. Los Angeles: Biblion Press, 1950.

This work is intended as a handy reference book of the healing arts. The subject matter is treated topically and arranged alphabetically.

"The concise medical encyclopaedia," the preface announces, "is an attempt to bridge the gap between medical dictionaries which say too little about too much; and the medical tomes which say too much about too much. . . ." This statement might well be paraphrased: The *Concise Medical Encyclopaedia* says too little on most subjects to be useful; and on some subjects, too inaccurately to be safe.

These shortcomings may be best shown by brief excerpts, in which the italics are supplied. Concerning treatment of jaw fracture, "Emergency treatment consists of the use of the four-tailed jaw bandage (Barton's); later approximating fragments by *wiring teeth and each side of the break, together;* immobilization by wiring upper and lower jaws together, feeding the patient by tube, through gap in teeth." "The electron microscope uses *light* of a very short wave length." "Pyorrhea Alveolaris. Dental periostitis, inflammation and recession of the gums and tartar formation on the teeth, leading to a loss of teeth. Pyorrhea occurs in dirty mouths. Treatment.—Dental prophylaxis, mouth washes, vitamins." "Uvula. A fleshy body hanging from the soft palate in the midline. Uvulas have sometimes been accidentally snipped off by ardent tonsillectomy surgeons."

The discussion headed "Statistical Methods" is not only useless and inaccurate but also absurd in some statements. In one instance the reader is instructed to square "the Bernoulli *theorem* of probability." He is also informed that "the arithmetical mean is the average of the values obtained."

The attempt at brevity often results in an absence of grammatical and logical connection. The synonymous terms frequently supplied after the key word, such as "enfermadad," the preface indicates are not typographical errors, but Spanish equivalents. The author disclaims "responsibility for any errors contained within, asking the reader to pardon

the frailty of printers, proofreaders and human beings generally." This seems like a great deal to ask in view of the use to which medical information is put by physicians and nurses.

George B. Denton

CLINICAL DIAGNOSIS BY LABORATORY EXAMINATIONS

By John A. Kolmer, M.D. Second edition. 1212 pages, with illustrations. Price $12. New York: Appleton-Century-Crofts, Inc., 1949.

This well organized and attractive book is designed primarily as a handy reference text for practicing clinicians who utilize the reports of clinical diagnostic laboratories. The need for such a book is obvious, since most clinicians are not sufficiently well versed in many of the types of laboratory diagnosis to base therapeutic measures on laboratory reports without assistance in their interpretation.

Information designed to enable the clinician to cooperate most effectively with the laboratory is included. A relatively small portion of the book is devoted to the technic of laboratory examinations. There are many helpful tables and illustrations. Some of the latter are in color.

Most of the text will be of value only to physicians. Some sections, such as those on skin tests, biopsy, examinations for hormones and vitamins, blood examinations, examinations of the saliva, bacteriologic examinations and serologic examinations for syphilis, may be useful to dentists.

D. A. Wallace

MICROBIOLOGY

By Florence C. Kelley and K. Eileen Hite. First edition. 592 pages. Index. New York: Appleton-Century-Crofts, 1949.

This volume is designed for the student requiring a concise yet comprehensive knowledge in the fields of general and pathogenic microbiology. It is primarily a teaching text and it is not intended to supplant the more exhaustive textbooks in the field. The presentation is divided into two parts. The first emphasizes the broad phylogenetic groups of microorganisms and their physiology. Interest in the physiologic aspects of bacteria has been stimulated in recent years by the use of these organisms in assaying food products for certain vitamins and amino acids. The second part treats parasitism and disease, immunity, viruses, rickettsiae, fungi, and protozoa. The relation of pathogenic microorganisms to other microorganisms and to the tissues of the host is stressed. Epidemiology is limited to a brief mention of sources of infection and modes of transmission of disease. The chapter on protozoa could profitably have been enlarged to include such elements of medical parasitology as flukes, roundworms and tapeworms.

The appendix will prove helpful to the student by outlining a chronology of significant developments in microbiology and many technical methods for use in the laboratory. Ample references are cited for each chapter, as well as a suggested textbook and journal library for microbiology and related fields.

This book is written in a clear and readable style. It can be recommended for use in an introductory microbiology course at the liberal arts level.

Samuel Herman

SURGICAL AND MAXILLOFACIAL PROSTHESIS

By Oscar Edward Beder. 51 pages with 31 illustrations. Price $3.00. New York: King's Crown Press, Columbia University, 1949.

This is a short, inexpensive, practical monograph of 51 pages describing the contruction of the various unusual prosthetic appliances which are to be used in conjunction with surgery or to be worn by the patient following surgery.

The many new materials and methods which have been introduced in the past few years, together with advanced technics in surgery, have created a much wider field in which the dentist can and should cooperate with the physician in the repair of such defects as may be treated better by prosthetic appliance than by surgery. The general technics used in handling these prosthetic materials are well known to the dentist. Specific variations to be used in the construction of the unusual prosthetic appliances are not so well konwn. This small book offers an excellent source of information.

Chapter two discusses splints and their use in the retention of fractured maxillary bones. To one acquainted with the efficiency of intermaxillary wiring this chapter may seem biased. However many of the author's arguments are valid and deserve consideration. Chapter three deals with stents or molds used to support grafts of skin or mucous membrane in the treatment of denuded areas in the mouth. This is an excellent chapter and is recommended to those interested in this form of appliance. Chapter four describes the construction and

use of protective shields for radiation therapy. There is little doubt that much tissue could be saved if such shields were used routinely.

The remainder of the book deals with the replacement of missing parts. These replacements may bring comfort to the patient undergoing surgery or make him presentable during his surgical treatment. In some instances prosthesis is more effective than surgery. In either instance, the dentist, with his knowledge of prosthetic materials, is well equipped to perform a great service to the patient. By referring to this monograph, he may, without too much trouble, reconstruct ears, noses, or portions of faces. This type of work offers a splendid opportunity for the dental profession to cooperate with the medical profession to bring about the ultimate rehabilitation of the patient.

W. R. Schram

JORDAN-BURROWS TEXTBOOK OF BACTERIOLOGY

By William Burrows, Ph.D., with the collaboration of Francis B. Gordon, Ph.D., M.D.; Richard J. Porter, Ph.D., and James W. Moulder, Ph.D. Fifteenth edition. 981 pages with 264 illustrations, 2 in color. Index. Price $9. Philadelphia: W. B. Saunders Company, 1949.

This is a thorough revision of a popular and generally excellent text. Although it is over 13 years since the death of E. O. Jordan, the author of the earlier editions, his name is still carried in the title chiefly as a token of the senior author's deep affection and respect. There are 38 chapters of which 13 are devoted to such general subjects as growth, bacterial physiology, effect of physical and chemical agents on bacteria, bacterial heredity, classification of bacteria and immunity.

The discussion of the breakdown of carbohydrates by bacteria is especially of interest to dentists because of its significant relationship to current literature on the subject of the etiology of dental caries.

In Chapter 26, under the section on *Lactobacillus acidophilus,* is a short statement dealing with the part played by bacteria in the causation of dental decay. The four illustrations used are credited to J. R. Blayney.

The reproductions of numerous photographs of bacteria taken with an electron microscope will appeal to the student and reader because of their pertinence and novelty. Many of the cuts are in the form of charts and diagrams. This book is essentially a medical treatment of both bacteria and other minute parasites active in the causation of disease. Its primary objective is to supply students with an adequate and reliable coverage of microorganisms for use in their professional courses. It is just as valuable for practitioners who try to keep up with new discoveries and current thought in this field.

Edward H. Hatton

A TEXTBOOK OF ORTHODONTIA

By Robert H. Strang, M.D., D.D.S. Third edition. 825 pages, with 1050 illustrations on 583 figures and 5 plates, 2 in color. Index. Price $15.00. Philadelphia: Lea & Febiger, 1950.

One of the principal reasons for writing the first edition of this book was the fact that detailed technical knowledge pertaining to Edward H. Angle's edgewise arch mechanism was not available in the literature. Technical data associated with the use of other mechanisms could then and can now be found in other books. This text book presents only explicit and detailed instruction in the use of this one device.

Dr. Strang has made a thorough revision of many portions in this third edition, and has brought it in line with current advances in the subject. The book is 94 pages larger than the previous edition. Among the new, rewritten and revised subjects are growth and development of the facial structures, eruption of teeth and development of occlusion, endocrinology and treatment technic. Time and experience have proved the value of the chapters devoted to the correction of malocclusion, which are based on the principles and technical procedures of C. H. Tweed. Clinical proof is now available to show that these procedures are capable of producing outstanding results. There are 126 new illustrations. Some of the subjects covered in this third edition are: basic principles, normal occlusion of the teeth, physiology of normal occlusion of the teeth and of the organ of mastication, factors of influence in evolving and maintaining normal occlusion of the teeth, etiology of malocclusion, facial lines in malocclusion, histology of dental tissues, growth and development of the denture, tissue changes taking place coincidental to tooth movement, orthodontic mechanism and the edgewise arch mechanism. Three chapters are devoted to case analysis, 13 chapters to treatment and four chapters to routine operative technic.

Teachers, students and dental practitioners alike will find this book well organized, clearly written and stimulating.

William F. Ford

PUBLIC HEALTH IN POLAND

Prepared by the Polish Research and Information Service. Mimeographed report of 31 pages with 4 tables and 2 charts. Index. New York: Polish Research and Information Service, 1949.

This is the fourth of a series of reports. The others dealt with trade unions, social legislation, education and social welfare under the present Polish government.

The report presents a rather glowing account of medical care under a socialistic form of government. Unfortunately the statistical evidence for the most part is based on quantity of services rendered to people rather than on the usual morbidity and mortality tables. This makes it impossible to properly evaluate the success of the program. Mere numbers of patients, while indicating tremendously increased activity and opportunity, are not necessarily indicative of a proportionate improvement in health.

No mention is made of the salaries to medical people under the program. The report reveals that physicians are required to devote 42 hours weekly to public health service, dentists work 36 hours, on a salary basis. After these hours are completed, the practitioner may carry on a private practice if he so desires.

There is no question but that tremendous strides toward universal medical care have been made and terrific handicaps have been overcome by the present government. Great credit is due for the complete planning and apparently thorough process that has been used for instituting the program. The monograph points out the deficiencies of the old system, the complete disruption during the German occupation and the expectations of the new program.

The report is interesting reading if for no other reason than to observe the attractive form which propaganda can assume if not studied with a critical eye.

H. Shirley Dwyer

HISTOLOGY

By Arthur Worth Ham, M.B. 756 pages, with 445 illustrations. Index. Price $10.00. Philadelphia: J. B. Lippincott Company, 1950.

In the preface Doctor Ham states that this book deals with the problems of learning and remembering histology as well as the subject matter of histology itself. Appraisal of this volume shows that the author has succeeded admirably in achieving this purpose. The practical aspects of histology are stressed throughout to achieve a correlation between histology, the other basic sciences and clinical medicine.

The book is divided into four sections. Part one consists of a discussion of what histology is and how it is studied. The common laboratory technics for the preparation of tissue for microscopic study are covered briefly but adequately. The chapter on the study and interpretation of sections stresses the need for three-dimensional visualization. A number of original drawings are used to help the reader in this respect. This chapter also contains a discussion of artifacts, a problem which is often confusing to the student. Some of the common artifacts are illustrated by photomicrographs. Cells, intercellular substances and fluids are discussed in section two. The various mechanisms and causes for edema are well illustrated. A full chapter is devoted to intercellular substances including a discussion of the present knowledge of hyaluronidase. Part three consists of a discussion of the four primary tissues and their subdivisions. Part four is devoted to the histology of the systems. Twenty-seven pages of the chapter on the digestive system are devoted to the histology of the oral cavity including the teeth. A very complete and well illustrated chapter on bone and bone development will be of interest to the dentist. Each chapter is concluded with a bibliography which includes many references to the recent literature. The index appears adequate. The format is exceptionally attractive. This volume can be highly recommended as a text book for the dental student or as a reference for the graduate student or practitioner.

Charles A. Waldron

THE AUTHOR PUBLISHER PRINTER COMPLEX

By Robert S. Gill. Second edition. Index. 144 pages. Price $1.50. Baltimore: The Williams & Wilkins Company, 1949.

The purpose of this book is to "tell the author, particularly of scientific material, as simply as possible, what he needs to know in order to make the start a good one." That is exactly what its author has succeeded in doing, and so well that it is a pleasure both to read and to review.

The fact that it is designed particularly for scientific authors makes it especially valuable for dental authors, both of books and of articles. Now in its second edition, it has been completely revised and most of it rewritten to include changes brought about by the im-

pact of time and additional information which the first edition failed to cover. The first two chapters orient the reader and set forth clearly, in the order of events, how the author's work and the printer's are geared together while a manuscript is going through press. Then come two chapters on preparation of manuscript, which describe how to achieve a "Form Suitable" for publication and "Fair Copy" and exactly why these two are important; a valuable chapter on illustrations which will help an author to avoid disappointment in reproduction of the charts and roentgenograms he is so proud of; an equally valuable one on the "Ends and Oddments," which includes hints about preparation of an index; and a chapter describing the business of reading the proofs. The last four chapters deal with preparation of new editions and describe in detail the business relationships between author and publisher.

An author about to make his literary debut, or an author who believes his editor unreasonably exacting or the printer merely an obstructionist, will find in these 140 pages information that will change the way from manuscript to bound volume from a tortuous one full of frustrations to a pleasant and profitable journey in partnership with publisher and printer. The word "profitable" is used advisedly since many an author finds his first royalty check used up by charges for "excess corrections" which could have been avoided if the author had known how to prepare his manuscript at the start.

The excellence of the contents of this compact little volume are matched by the simplicity and economy of language of the author's style.

Paddy Howes

CURRENT THERAPY 1950: LATEST APPROVED METHODS OF TREATMENT FOR THE PRACTICING PHYSICIAN

Edited by Howard F. Conn, M.D. 736 pages. Index. Price $10. Philadelphia: W. B. Saunders Company, 1950.

This text brings to the practicing physician a record of the current methods of treatment and procedures as practiced by the more than 250 distinguished contributors who have combined to make this such an outstanding and useful book. Much of the material of the 1949 edition has been reorganized and the section on infectious diseases has been completely revised in the light of advances in chemotherapy. Throughout section 1 a rational conservative viewpoint is expressed concerning the indiscriminate use of sulfonamides, penicillin, and so forth, and their usefulness stressed when indicated. Of interest to the dentist is the importance of the care of the mouth in infectious mononucleosis, and in the detailed description of the treatment of Vincent's angina.

Section 2 includes the therapy of the diseases of the respiratory system in a most effective manner. The diseases of the cardiovascular system are covered in section 3, and the therapeutic measures to meet all situations are presented in detail. The danger of dental extractions in individuals with minimal evidences of valvular heart disease is stressed with the recommendation that at least 500,000 units of penicillin should be given before operative procedures, continuing this dosage for four days. Section 4 covers the therapy of diseases of the blood and spleen. The dentist will find the material on agranulocytosis and hemophilia of practical importance.

Other sections discuss diseases of the digestive system, the endocrine system, allergic and venereal diseases, and treatment of diseases of the locomotor system.

Section 11, diseases of the skin, includes a number of conditions of interest to the dentist and the oral surgeon—notably erythema multiforme, leukoplakia buccalis, lichen planus, pemphigus and actinomycosis. Included are precancerous lesions and cancer of the skin.

Section 12, diseases of the nervous system, contains a discussion of headache, neuritis-neuritidis trigeminal and glossopharyngeal neuralgia, and Bell's palsy as well as various types of psychoses.

The therapy of obstetric and gynecologic conditions and the treatment of diseases due to physical and chemical agents, is covered in a most detailed and thorough manner.

Current Therapy 1950 is an unusually complete, well-arranged, and easily read text. The format is excellent. The large number of outstanding contributors together with its consultative staff assures the reader reliable, up-to-date, specific information on the treatment of important diseases and conditions.

Carl W. Waldron

Current Literature

THE PREVENTION OF CARIES IN THE SYRIAN HAMSTER WITH SODIUM OXALATE

R. M. Twedt and F. A. Cajori. Journal of Nutrition 40:393, March 10, 1950.

Soluble oxalates in the food or drinking water of the rat effectively protect the molars from being decalcified by phosphoric or citric acid. This suggests that oxalates might also protect teeth against the acids arising as a result of bacterial action and prevent carious lesions.

The Syrian hamster was chosen for the experiment because caries is easily produced by feeding this animal on a high carbohydrate diet, and the teeth of the hamster are completely covered with enamel and have a morphology similar to that of human teeth.

The experimental animals were divided into five groups, and each group was fed a high cariogenic diet. Two of the groups received sodium oxalate to a level of 0.5 per cent and three groups received the high cariogenic diet without the addition of sodium oxalate.

The animals were sacrificed at periods varying from 61 to 142 days. Caries indexes were compared between the cariogenic and the oxalate groups and between sexes of the same group. Sodium oxalate in the cariogenic diet at a level of 0.5 per cent protected the hamster from caries. Chemical analysis revealed that significant amounts of the oxalate were incorporated into the teeth.

Donovan W. Brown

SOME ORIGINAL INVESTIGATIONS INTO PRESSURE HABITS AS ETIOLOGICAL FACTORS IN DENTOFACIAL ABNORMALITIES

A. Vernon Fluhrer. Am. J. Orthodon. 36:37, January, 1950.

This writer has attempted to show that osseous structures will respond to pressure stimulation. All previous investigators in this field have found this to be true. Their findings show pressures do not have to be continuous. Bone will and does change with intermittent pressures because osteoclasts and osteoblasts keep working after the pressure has been removed.

A method for taking pictures of sleeping children at predetermined intervals during the night was developed. Over four hundred photographs, taken by the author, of forty-five children asleep, have shown conclusively that over 50 per cent of these children who are having orthodontic treatment are exerting pressures against their prolifically growing facial structures for at least 50 per cent of their sleeping period. These same children have been watched carefully in the office, and most of them, during periods of relaxation, have been observed in poor postural positions exerting pressures against these same structures.

It has been shown that continuous pressure is not necessary to cause changes in bone structure; intermittent pressures are sufficient to bring about these changes.

Many other etiological factors may enter the picture. The child may sleep on his stomach only a few hours during the night and he may lean on his chin a few hours during the day. This may total eight or ten hours a day, which is enough time for the osteoblasts and the osteoclasts to proliferate and promote osseous changes in the dentofacial structures.

William F. Ford

DENTAL PROGRAM IN INDUSTRY

A. Gibson, J. M. Carlisle and S. M. Hoch. Industrial Medicine and Surgery. 19:37. January, 1950.

Industrial medicine has not generally included dental service since dental disorders are generally non-occupational in origin, but the industrial physician can properly concern himself with case finding and make reference for treatment.

The plan at the Merck and Company plant includes both medical and dental preplacement examination and periodic examination in the belief that both the worker and the plant are benefited. Where dental care is indicated the worker is advised to seek dental service and is called back for reexamination. In one group studied, many of the workers obtained dental service before the recall, but about half were recalled three or more times before they acted on the advice to see a dentist and about one-third never did obtain dental care.

A comparison of dental needs in a group of higher income executives and a group of workers showed the workers had nearly three times as many carious areas, twice as many teeth missing and half as many fillings as the executives. The conclusion is that the posses-

sion of money and education does not prevent tooth decay but does lead to obtaining proper dental attention. No appreciable difference was noted between the sexes.

The dental examination is believed to be definitely beneficial, and in this plant over 5,000 people have received the dental examination and a large percentage have found their way into the offices of dentists of the community with advantage to the people, the dentist and the company.

Charles W. Freeman

THE ROLE OF OBSERVATION AND SIMPLE TREATMENT IN THE PRACTICE OF ORTHODONTICS

Harlow Louis Shehan. Am. J. Orthodon. 36:1, January, 1950.

This paper stresses the importance of simplicity and observation as sound guiding principles for orthodontic practice. The case illustrations have attempted to show that the use of these principles in clinical practice enables the clinician to adhere more closely to high professional standards by providing advice and guidance when requested, and treatment when necessary always kept at a minimum.

William F. Ford

THE SIGNIFICANCE OF BALANCED OCCLUSION WITHIN AND BEYOND THE NORMAL FUNCTIONAL RANGE IN COMPLETE DENTURE PROSTHESIS

R. O. Schlosser. The Journal of the Canadian Dental Association. 16:67. February, 1950.

The author, contending that balanced occlusion is a significant factor in the maintenance of denture stability and retention, in the functional efficiency of the dentures and in comfort to the patient, presents his technic for obtaining balanced occlusion. He believes that most methods of articulation are based on chance and, as it is important to bring the scientific method to dentistry, believes that balanced occlusion is the closest principle in complete denture prosthesis that remedies this situation.

Advocating the use of an adjustable articulator, the author prescribes an accurate transmission of the maxillomandibular relations to the articulator by means of the face bow and a series of lateral, protrusive and centric records. He further contends that, after the casts are mounted on the articulator by these means, and if the individual teeth are arranged according to their correct positions, balanced occlusion is almost completely obtained automatically. A few final adjustments complete the balanced articulation.

Inasmuch as there are dimensional and functional changes in the processing stage of the acrylic resins, the author presents a technic of correction of these acquired changes. This technic is essentially re-recording the various mandibular excursions and vertical dimension and taking these new records back to the articulator on which the necessary corrections are made by spot grinding and milling of the occlusal surfaces. By increasing the condylar guidance 5 degrees he further feels that milling in this range eliminates the hard impact in the incisal area. By reducing the condylar guidance and repeating this procedure, he eliminates the hard impact in the molar region. By this latter movement he obtains easier clearance of occlusal contact upon mandibular excursions. Polishing the ground surfaces of the teeth enhances the patient's comfort.

Balanced occlusion results in providing a stimulus to the supporting structures of the mouth and marked improvement in tissue tone. This action aids in retention and stabilization of the dentures. If, after the dentures are constructed at a vertical dimension within the limits of biological tolerance, and the correct balanced occlusion is introduced, ridge resorption is retarded.

L. A. Varteressian

STUDIES OF THE ACTION OF SODIUM FLUORIDE ON HUMAN ENAMEL BY ELECTRON MICROSCOPY AND ELECTRON DIFFRACTION

D. B. Scott, R. G. Picard and R. W. G. Wyckoff. Pub. Health Rep. 65:43, January 13, 1950.

Clinical and analytical evidence of the effect of fluoride on teeth has received widespread attention. Physical methods which may help reveal the unknown mechanism of fluoride action rely upon studies of surface enamel through electron micrographs and electron diffraction patterns. Three sets of experiments are presented:

1. The fine structure of fluoride-treated enamel is made visible by chromium-shadowed collodion replicas of enamel surfaces photographed with an electron microscope. Polished slabs of subsurface enamel were used to avoid variations present in outer surfaces of enamel. Visible changes were pronounced only

upon long immersion in fluoride solution (15-30 days) producing a visible crystalline deposit. This surface deposit was not more plentiful, if a 3 or 4 per cent sodium fluoride solution was used in place of the 2 per cent NaF. A 6 day washing period apparently removed the deposit completely.

2. Increased insolubility of enamel in acids following fluoride treatment was also studied by electron microscopy. The varied appearance of the specimens makes interpretation difficult and the tests inconclusive.

3. Clinically significant fluoride treatments of 3-minute duration were studied by electron diffraction patterns. The apatite pattern is replaced by that of calcium fluoride after an immersion in sodium fluoride of only 3 minutes, which is insufficient to reveal a deposit detectable under the electron microscope. Subsequent washing in water causes the calcium fluoride pattern to revert to that of apatite.

William B. Savchuck

ORTHODONTIC CONSIDERATIONS IN THE SURGICAL MANAGEMENT OF DEVELOPMENTAL DEFORMITIES OF THE MANDIBLE

Gerald V. Barrow and Reed O. Dingman. Am. J. Orthodon. 36:121, February, 1950.

In planning these operations numerous technics have been employed for determining the angulation of the cuts and the amounts of bone to be removed. Because of numerous complications in other technics, the operation is now performed through the body of the mandible. The part of the orthodontist in the correction of such cases includes the following: (1) determination of the size and shape of the bone segments to be removed; (2) construction and management of appliances in preparation for surgery and during healing; (3) maintenance of pre- and postoperative records; (4) pre- and postoperative orthodontic adjustment if indicated.

The types of cases that may be successfully corrected by surgery are those too extreme to be managed by orthodontic treatment alone, such as extreme types of mandibular prognathism, mandibular deficiency, nonhabit open bite, lateral mandibular displacement and various combinations of the above.

For each patient, two sets of accurate dental models are constructed. These models are occluded and trimmed, except for minor changes, according to accepted orthodontic standards. In order to occlude the models properly a wax bite is taken. The mandibular first molar region is the site usually chosen for the bone removal, but if edentulous areas are present in the second premolar or second molar regions these latter sites may be used if the space is adequate. A saw is used to cut the models and the cuts are made at right angles to the occlusal plane and perpendicular to the sides of the mandibular model.

In moving the three parts of the mandibular model into the best possible relationship with the maxillary model, the posterior segments of the mandibular model usually need to be moved lingually and the direction of movement, in general, is perpendicular to the sides of the lower model. The size of the spaces between the anterior and posterior parts of the mandibular model is the size of the bone segments to be removed from the body of the mandible.

The appliances are made of precious metal because the material is easy to handle and very strong. If there is a full complement of teeth, then approximately half of them need to be banded. If many teeth are missing it is advisable to construct bands for all remaining teeth.

William F. Ford

PREVENTION OF MALOCCLUSION

C. M. Seipel. D. Record 69:224, August-September, 1949.

The author differentiates between genetic, medical and orthodontic character of preventive measures. He concludes from a series of investigations by other workers that genetic prevention of malocclusion is limited. Rather it seems that a wide-spread orthodontic treatment of anomalies will increase their genetic frequency.

Where pathologic factors are responsible for the production of malocclusion, the deformations are of a specific character and medical prophylaxis should be applied in a preventive direction. Orthodontic prevention is directed against malocclusion of a local nature by way of extraction and exfoliation control, occlusal adjustments and habit control. Functional stimulation may also play a role in the prevention of dental malocclusion.

In fifty cases of early loss of deciduous teeth, examined about ten years after extraction, the mean decrease of space values on the extraction side, compared to the non-extraction control side, was found to be 1.9 ± 0.30 mm. Preventive measures by way of space maintainers were found to show a clear positive effect only in eighteen per cent of seventy-two cases, with early loss of deciduous molars.

Jay S. Wolf

CHANGING DYNAMICS OF THE GROWING FACE

Spencer R. Atkinson. Am. J. Orthodon. 35:815, November, 1949.

A lifelong study of hundreds of skulls, both juvenile and adult, and years of active practice produce convincing evidence of the advisability of prevention where possible. If not, then early treatment should be undertaken and the denture should be supervised from both the physical and the psychological standpoints.

A good idea of the anatomy of the human jaw may be obtained from histologic sections of the newborn. Muscles and bone are in place, ready to function. The inherited pattern and growth expectancy have been established.

Jaws normally follow a distinct inherited pattern during their growing period, with slight, if any, change in shape. However, this is assuming no adverse influence is brought to bear on either or both of the jaws. For instance, if the teeth begin to shift into malocclusion, or if there are missing teeth or some other discrepancy, one side of the jaw may be brought forward and to one side to allow a comfortable occlusion of the teeth. The head of the condyle is usually distorted, due to the continued pull of the external pterygoid muscle.

In examining hundreds of skulls there seems to be no formula yet developed which even approximately expresses the proper angle of mandibles. Mandibles are shaped according to inherited type and conformation of the entire head, particularly the muscles of mastication, which in turn harmonize with the rest of the body mechanism. The distance between the head of the condyle and the tip of the coronoid process varies considerably; in some instances it may even double, and the teeth still be in harmonious occlusion.

The old rule that the shape of the head is an index to the arch form does not seem to hold true when a great number of skulls are measured.

At birth there is no alveolar process in either jaw, there is only the body of the mandible and the roof of the mouth. The two jaws are almost entirely occupied by developing teeth. As the teeth begin to erupt, the alveolar process starts to form and the maxillary sinuses begin to develop. The growth of the cranium is almost complete at the age of 8, while the facial portion of the skull continues to synchronize with the general growth of the entire body.

The outer surface of the maxillary bone is divided into two portions, anterior and posterior. The dividing line is the strong ridge of bone descending downward and forward from the zygomatic process of the maxillary bone. This dividing line, or ridge of bone, has been called the key ridge. It is an important ever-present landmark in all skulls, regardless of racial type, age or pattern. There is a definite relation of the buccal teeth to this key ridge all during life.

As to the teeth themselves, there are many variations. One common variation observed on molars is a strip of enamel growing down the buccal surface of the crown between the roots. Another anomaly of enamel is found in cases in which there is an invagination of enamel, causing a lingual pit in the maxillary lateral incisor. Occasionally this invagination appears to close, but it actually opens apically again into a hidden cavity, sometimes quite extensively.

William F. Ford

THE HIGH INCIDENCE OF CERVICAL DENTAL CARIES AMONG DRUG ADDICTS

S. S. Hecht and J. Friedman. Oral Surgery, Medicine and Pathology. 2:1428. November, 1949.

This report by Dr. Hecht and Dr. Friedman is based upon the observations made during the routine dental examinations of more than 150 drug addicts and 50 controls who had been institutionalized by the Department of Correction of the City of New York over a 15 year period. One hundred and forty of these were addicted to heroin, either alone or in combination with other narcotics.

The average addict was found to be an individual approximately 30 to 38 years of age, in generally poor physicial condition, and with a waxy, transparent skin suggestive of anemia. He was usually of average intelligence and possessed at least an elementary school education. Heroin was the drug most commonly used, and the average addict showed a history of numerous but unsuccessful attempts to break the habit.

Examination revealed extensive cervical caries and gingival recession with generally broken down dentition and marked brown-stained retained roots often covered with materia alba. Decay followed characteristic paths which undermined the enamel incisally, apically and horizontally to produce "circular caries." Much of the brown stain is attributed to tobacco which is in wide use by the subjects.

Information contributed voluntarily indicated that many of the addicts consumed large quan-

tities of refined carbohydrates, which appears to favor the high incidence of dental caries. Low thiamine intake and the improper diet of the average addict are cited as favoring slow rise in pyruvic and lactic acid concentrations in the blood stream which could explain the high incidence of circular caries at the necks of the teeth of addicts. The possibility that excretion of these highly acid forms into the saliva of the mouth is also suggested as a contributing cause.

Compared with the controls, 9.3 per cent of the cavities in the drug addict group were cervical cavities, compared with only 0.16 per cent for a control group. Right and left mandibular cuspids and the left first bicuspids also appeared to be more susceptible to cervical caries than were the other teeth.

Although recognizing the likelihood of other possible causes, the authors attribute the high incidence of cervical caries in drug addicts to the avitaminosis and nutritionally deficient state which were found to be common in this unfortunate group.

Paul E. Tullar

ESMARCH'S OPERATION FOR THE RELIEF OF ANKYLOSIS AND OF PAIN IN THE TEMPOROMANDIBULAR JOINT: A MODIFIED OPERATIVE TECHNIC

Patrick Clarkson and H. H. Kenshole. Brit. D. J. 10:257, November 18, 1949.

The authors discuss the use of a surgical technic to prepare a false joint in the ascending ramus of the mandible in cases of ankylosis of the temporomandibular joint. A modified operative technic is presented which avoids the possibility of injury of the seventh nerve and makes it possible to make the false joint at a higher point in the ramus. The half-inch incision is made between the angle of the jaw and the attachment of the lobe of the ear. The ascending ramus is cleared over a wide area. A Kostecka needle is then passed through the deep aspect of the ascending ramus in a line with the inner canthus of the eye above the level of the mandibular foramen, and is brought into the cheek just below the inferior border of the malar bone. A Gigli saw is threaded through the slot in the point of the needle and the mandible is then sectioned with the Gigli saw. The same procedure is repeated about a half inch below the first cut and this segment of the ramus is removed. The incisions are closed with fine silk and the operation is completed. Several case histories are presented showing the results by this procedure which in cases extending over twelve to eighteen months have shown definite benefit, with a considerable movement of the jaw permitted but in many cases the power of mastication has been considerably reduced and the chin has been inclined to recede to some extent.

Charles W. Freeman

NEW ZEALAND SCHOOL DENTAL SERVICE IN OPERATION

C. D. Marshall-Day, B.D.S., D.M.D., M.S., Ph.D. Journal of Dentistry for Children, Fourth Quarter. 16:4. 1949.

C. D. Marshall-Day, Dean of Tufts College Dental School in Boston, presents a firsthand report of the method employed and the progress made in New Zealand under the government sponsored dental health program for school and preschool age groups from 2½ to 13 years.

Selected female trainees, to be graduated with the title of School Dental Nurse, are trained for a two year period at special government-controlled and operated schools. At the end of this time, upon the trainee's successful passing of all examinations, she is assigned to one of the variously located school dental clinics where the dental needs of preschool and school children are cared for.

The student dental nurse is required to agree to serve for not less than five years including the two years' training period. The cost of the service including the training period is borne by the government, and appointments are subject to the provisions of the Public Service Act and other acts affecting the public service, and salaries graded accordingly.

Apparently the program is a success when viewed from the aspect of number of teeth restored as compared with the number of teeth removed because of their being beyond restoration. In 1919, when the program was first instituted, for every 100 restorations there were 114.5 extractions. As of March 31, 1948, for every 100 restorations there were 6.02 extractions.

Lon V. Porter

EFFECT OF TRAUMATIC OCCLUSION ON DENTAL AND PERIODONTAL TISSUES

John Oppie McCall, J. South. Calif. D. A., 17:16, July, 1950.

Stillman proposed the term "traumatic occlusion" in 1916 to designate a type of occlusal abnormality which has since been accepted by most dentists as a cause of periodontal disease.

It is defined as an occlusal relation that is causing or is capable of causing injury; this injury may affect dental as well as periodontal tissues. Occlusal contact of teeth is a normal act; whether it causes harm depends on the balance between the intensity of the force exerted and the capacity of the alveolar bone to support that force. In one case functional stress which is within the normal limits of intensity may cause early and rapid periodontal destruction, while in another severe stresses may exist for years with but minor effects on the periodontium.

Types of difficulties caused by traumatic occlusion are: (1) no observable injury, usually temporary if the stress is relieved; (2) pulp irritation, sensitiveness to thermal change or to touch at the gum line; (3) recession of the gum, when not accounted for by improper toothbrushing; (4) periodontal breakdown with vertical pocket formation; (5) diastema and labial wandering of incisors, traumatic relationship can be demonstrated in the early stages; (6) temporomandibular disturbance, usually caused by a mesiodistal gliding contact, and (7) bruxism, often due to nervousness but may be a reflex act excited by a traumatic relationship.

The method of correction recommended differs somewhat from that usually advocated. Grinding is started on the key point, the tooth or cusp causing the most marked disturbance as indicated by tooth mobility and deep pocket formation. Carbon paper is used chiefly to indicate what spot on an offending tooth is to be reduced. After the first relief is given the patient's sensation of relative pressures is usually a reliable guide to the teeth which subsequently are to be ground. It is recognized that some malocclusions causing traumatic stress can only be corrected by orthodontic procedures.

John Oppie McCall

TRAUMATIC OCCLUSION: CAUSE OR EFFECT IN PERIODONTAL DISEASES

Arthur H. Merritt, D.D.S., M.S. D.Sc., New York, N. Y. The New York State Dental Journal, 15:507. November, 1949.

In this article Dr. Merritt writes the key paper while Drs. McCall, Parks, Box and Bodecker are discussers.

Dr. Merritt states that traumatic occlusion seems to be "an imbalance between the force applied to teeth in the act of mastication, and the resistance to that force by the tissues receiving it." In periodontal disease it is not excessive occlusal stress that breaks down tissue resistance but normal force on tissues which have lost their power of resistance.

Recommended treatment is a building up of tissue resistance and occlusal grinding. Grinding is used in cases of obvious trauma. It is to be used with caution and only to give temporary relief. In Dr. Merritt's opinion traumatic occlusion is a symptom of periodontal disease and not the principal etiologic factor.

Dr. McCall feels that traumatic occlusion can be a basic cause of periodontal disease. Treatment should include occlusal equilibration for most satisfactory results. Excessive grinding is not recommended.

Dr. Parks feels that continuous eruption of teeth prevents satisfactory treatment by grinding. Should satisfactory relations be established the adjustment would hold only as long as no movement takes place.

Dr. Box is of the opinion that traumatogenic occlusion is a local predisposing factor. He states that lesions of necrotic gingivitis and necrotic periodontitis are frequently localized around teeth in traumatogenic occlusion and this factor has brought about a lowered tissue resistance which favors infection. Therefore, traumatogenic occlusion should be eliminated as completely as possible.

Dr. Bodecker feels that periodontal inflammation is caused by occlusal trauma if the stress is sudden and excessive. He says grinding of occlusal surfaces for the relief of trauma is an adjunct to periodontal treatment but not a cure *per se*.

J. L. Hutton

CURRENT PROBLEMS AND PROGRESS IN GENERAL ANESTHESIA FOR DENTAL AND ORAL SURGERY

S. V. Marshall and L. T. Shea. The Dental Journal of Australia. 21:443. November, 1949.

This paper is divided into two parts with each author commenting on general anesthesia problems. The authors feel that the basic training and practical experience of the dentist are insufficient to qualify him to give general anesthetics. They contend that dentists should not dabble in general anesthesia until their teaching and training have been very much improved. They also point out that a trained physician anesthetist may not be familiar with the peculiar difficulties and dangers accompanying oral surgery. Both authors discuss Trilene (trichlorethylene), a colorless liquid with a smell like chloroform. This is a noninflammable and nonexplosive agent, but if heated, it decomposes and gives off phosgene

and other irritants. Trilene cannot be used in closed circuit carbon dioxide absorption anesthesia due to the toxic products formed in the presence of soda-lime. While seldom used for total anesthesia because of its poor volatility, Trilene has remarkable analgesic effects.

Heyl G. Tebo

SELLA TURCICA-NASION DEPTH IN MANDIBULAR BODY LENGTH IN RELATION TO HEAD CIRCUMFERENCE AND HEAD LENGTH

Gerald P. Larson and Howard V. Meredith. Am. J. Orthodon. 35:922, December, 1949.

The authors' summary presents such a concise picture of this study that it is quoted as follows:

"This investigation is concerned with the interrelationship of selected dimensions of the head. It treats the degree of association between (1) head circumference and length of mandibular basal bone, (2) head circumference and sella-turcica-nasion depth, (3) head length and length of mandibular basal bone, and (4) head length and sella turcica-nasion depth. The sample utilized consists of 100 white children, all examined within three days of their fifth birthday.

"The orthodontic interest in this problem lies in the possibility of predicting mandibular basal bone length and sella turcica-nasion depth from more easily obtained head dimensions.

"Selected findings are: (1) the error in predicting mandibular basal bone length from either length or girth of head would exceed 2.7 mm. for one child in every three. Occasionally the error would be as great as 6 to 7 mm.; (2) prediction of sella turcica-nasion depth from head girth or length would be in error by more than 2 mm. for one out of every three children. Occasional errors of predictions would be as high as 6 to 7 mm.

"Considering that it would be impossible to tell in day-to-day predictions on which children the largest errors were being made, and whether these individual errors were in the positive or negative direction, it is recommended that mandibular basal bone length and sella turcica-nasion depth be determined by direct measurement upon the profile roentgenograms.

"The 't test' was employed to determine whether any significant difference existed between the 82 individuals in the 'Normal' and 'Class I' groups and the 18 in the 'Class II' group, in (1) the ratio of mandibular basal bone length to head length and (2) the ratio of sella turcica-nasion depth to head length. No statistically significant differences were found. Consequently, it cannot be said with any degree of certainty that a 'Class II' dentofacial deformity is typified by a relatively 'shorter' mandible or a relatively deeper upper face as compared to the 'Normal' or 'Class I' classification."

T. D. Speidel

THE DENTITION OF THE CAPE COLOURED POPULATION AS SHOWN BY A GROUP OF 150 MALE AND FEMALE SKULLS

M. R. Drennan. So. African D. J. 23: 330 July-August, 1949.

The author reports the results of his study of the University of Capetown dried skull collection. The ethnic origin of the 150 skulls is a mixture of Hottentot, Malayan, Caucasoid and Negroid elements, with some Bantu and Hamitic strains. Maximum mesiodistal length and labiolingual breadth were measured with a fine Vernier scale caliper. In his measurements, Professor Drennan noted the difference in tooth size on right and left sides. He attributed this discrepancy to the plasticity of teeth during one stage of their development, which allows them to adapt themselves to the area they are permitted to occupy. A comparison of male and female dental units showed significant differences in the molars and cuspids. Functional wear on the colored group proved considerable, though not as pronounced as that seen in Bushman or Bantu skeletal samples. Both occlusal and contact surfaces were affected. Little or no malocclusion was seen in the 150 skulls. There was practically no evidence of restorative dentistry. Mouths were usually healthy, probably due to the extraction of large numbers of teeth. Adding to the ravages of caries, there was further loss of teeth because of post mortem handling of the skulls. This limited the number examined to only 34 per cent of the possible total. Ninety-five per cent of the dentitions were devastated by caries, but only 40 per cent had active caries. The incidence of caries was 4 per cent less in the mandibular teeth. There seemed to be a progressive increase in caries with advancing age. Of all the teeth, the cuspids were the most resistant to caries, though the lower incisors appeared almost as caries immune.

T. M. Graber

Deaths

Dixon, George E., Shady Grove, Ark.; died October 10; aged 62.

Donahue, James E., Turners Falls, Mass.; College of Dentistry, University of Tennessee, 1920; died August 25; aged 58.

Eckle, Walter R., Lexington, Mo.; School of Dentistry, Washington University, 1891; died October 1; aged 81.

Edwards, Albert U., Beckley, W. Va.; Kansas City-Western Dental College, 1896; died October 13.

Erlands, John O., Racine, Wis.; College of Dentistry, University of Illinois, 1903; died October 4; aged 73.

Erwin, John P., Perkasie, Pa.; Philadelphia Dental College, 1896; died September 13; aged 77.

Esch, Oscar W., Milwaukee; Dental School, Northwestern University, 1915; died September 2; aged 50.

Fallon, William H., Pittsfield, Mass.; School of Dentistry, Temple University, 1900; died October 27; aged 75.

Felix, Achilles F., Wollaston, Mass.; Baltimore College of Dental Surgery, University of Maryland, 1903; died September 14; aged 70.

Felton, Carl, Sheboygan, Wis.; Dental School, Marquette University, 1928; died October 12; aged 46.

Fickensher, Grace B., Chicago; died October 6; aged 80.

Fordyce, DeLorme T., Conshohocken, Pa.; School of Dentistry, Temple University, 1907; died November 7.

Fowler, Judge W., Jackson, Miss.; Atlanta Southern Dental College, 1917; died September 1; aged 54.

Frey, John A., Mayville, Wis.; Dental School, Marquette University, 1921; died August 28; aged 53.

Friedman, Lloyd F., New York; College of Dental and Oral Surgery, 1923; died September 20; aged 49.

Fuerst, Simon, Cleveland; School of Dentistry, Western Reserve University, 1922; died October 8; aged 51.

Galloway, Preston A., Bradenton Beach, Fla.; Cincinnati College of Dental Surgery, 1913; died in September; aged 61.

Garland, Gordon E., Brockton, Mass.; Dental School, Tufts College, 1919; died November 4; aged 54.

Globus, James, Brooklyn; College of Dentistry, New York University, 1914; died October 3; aged 77.

Goodney, Sydney B., Chicago; Chicago College of Dental Surgery, 1917; died September 14; aged 64.

Graham, Alvah B., Yankton, S. D.; Dental School, Northwestern University, 1892; died in August; aged 82.

Green, Helmar G., Fargo, N. D.; died September 10; aged 67.

Griffith, Robert L., Homewood, Pa.; School of Dentistry, Tulane University, 1916; died September 15; aged 58.

Grubb, Alfred H., Coral Gables, Fla.; School of Dentistry, University of Pennsylvania, 1892; died August 11; aged 79.

Hanson, Grier, Lewiston, Ill.; Chicago College of Dental Surgery, 1897; died September 2; aged 80.

Hayes, Thomas J., Tonawanda, N. Y.; School of Dentistry, University of Buffalo, 1926; died October 7; aged 52.

Hatfield, Homer R., Grand Island, Nebr.; Omaha Dental College, 1902; died September 15; aged 73.

Heintz, Herbert M., Toledo, Ohio; Ohio College of Dental Surgery, University of Cincinnati, 1914; died October 5; aged 57.

Helah, Charles E., Bath, Me.; died September 15; aged 85.

Herrald, Fletcher H., Eldora, Iowa; College of Dentistry, University of Iowa, 1910; died October 8; aged 67.

Heublein, Richard G., Kirkwood, Mo.; School of Dentistry, St. Louis University, 1910; died August 26; aged 65.

Holahan, Howard V., Brooklyn; New York College of Dentistry, 1917; died October 11; aged 55.

Hughes, Herbert G., Greybull, Wyo.; Colorado College of Dental Surgery, 1915; died October 16; aged 58.

Hughes, Joseph E., Everett, Mass.; Dental School, Tufts College, 1924; died September 28; aged 51.

Hunt, Burton T., Lowville, N. Y.; College of Dental Surgery, University of Michigan, 1896; died October 4; aged 80.

Hurley, Roy F., San Bernardino, Calif.; Dental School, Northwestern University, 1915; died August 26; aged 60.

Ihle, Edward A., Chippewa Falls, Wis.; College of Dentistry, University of Minnesota, 1905; died September 11; aged 72.

Ingels, Earl V., Montrose, Colo.; Dental School, Northwestern University, 1924; died October 26; aged 70.

Jacobson, Mark S., Rochester, N. Y.; died September 3; aged 67.

Jacoway, William D., Dardanell, Ark.; College of Dentistry, University of Tennessee, 1900; died October 11; aged 81.

Johnson, Gustaf W., Norway, Mich.; Dental School, Northwestern University, 1917; died May 28; aged 54.

Jones, Bibb R., Lampasas, Texas; Texas Dental College, 1938; died March 31; aged 37.

Karlson, Arvid, Omaha; Lincoln Dental College, 1918; died August 10; aged 58.

Kelly, James F., Bridgeport, Conn.; Philadelphia Dental College, 1908; died September 25; aged 71.

Knechtly, Otis U., Bedford, Ohio; College of Dentistry, Ohio State University, 1909; died September 26; aged 65.

Knox, Frederick L., Philadelphia; Pennsylvania College of Dental Surgery, 1907; died October 7.

Kunin, Stanley, Welfare Island, N. Y.; College of Dentistry, New York University, 1946; died October 1; aged 28.

Lathrop, Burr W., Saginaw, Mich.; College of Dental Surgery, University of Michigan, 1915; died September 10; aged 60.

Leprohon, Jean B., Brooklyn; New York College of Dentistry, 1899; died October 22; aged 78.

Leverton, Elmer R., Warren, Ind.; Dental School, Northwestern University, 1905; died October 11; aged 67.

Little, Robert H., Columbus, Ga.; Atlanta Dental College, 1907; died September 9; aged 70.

Little, Samuel A., Hartford, Conn.; Dental Department, Baltimore Medical College, 1897; died September 4; aged 81.

Livingston, Lauriston R., East Orange, N. J.; School of Dentistry, Georgetown University, 1920; died November 6.

Lynch, Ambrose H., Providence, R. I.; Dental School, Tufts College, 1918; died October 9; aged 66.

Mabbs, Ray S., Muskegon, Mich.; School of Dentistry, University of Louisville, 1907; died September 26; aged 68.

Mallory, Lorne C., Renton, Wash.; School of Dentistry, Temple University, 1908; died September 27; aged 71.

Marks, Louis, Philadelphia; School of Dentistry, University of Pennsylvania, 1917; died October 13; aged 54.

McGlashan, John W., Canton, Ohio; Ohio College of Dental Surgery, University of Cincinnati, 1899; died October 27; aged 72.

McGuire, Austin C., Bloomington, Ill.; Chicago College of Dental Surgery, 1903; died October 14; aged 71.

McMullen, Robert L., Largo, Fla., died October 30; aged 82.

McNamara, Walter L., Cleveland; died October 22; aged 80.

Mehrer, Albert, Philadelphia; Pennsylvania College of Dental Surgery, 1904; died September 24; aged 73.

Menuez, Louis E., St. Petersburg, Fla.; Ohio College of Dental Surgery, University of Cincinnati, 1892; died October 11; aged 90.

Metzler, Clyde C., Birmingham, Mich.; Omaha Dental College, 1901; died October 14; aged 69.

Molsberry, Frank R., Sac City, Iowa; College of Dentistry, University of Iowa, 1905; died September 13; aged 75.

Montsinger, Vernon W., Newport, Tenn.; College of Dentistry, University of Tennessee, 1912; died October 20; aged 62.

Moore, O. Frederick, Chicago; Chicago College of Dental Surgery, 1916; died October 29; aged 60.

Morris, Spurgeon, Chicago; died October 19; aged 50.

Munson, Bernard J., Argyle, Wis.; died October 21; aged 56.

Nance, Denver, Fayetteville, Ark.; School of Dentistry, Washington University, 1919; died October 6; aged 63.

Neblett, John W., Balboa, Calif.; School of Dentistry, Vanderbilt University, 1897; died September 14; aged 81.

Wolpers, Casimir C., Chicago; died October 24; aged 47.

Woodford, John U., Long Beach, Calif.; College of Dentistry, University of Southern California, 1940; died October 13; aged 33.

Wright, John J., Milwaukee; Chicago College of Dental Surgery, 1894; died October 10; aged 80.

Yetter, Clyde W., St. Jo, Texas; College of Dentistry, Baylor University, 1920; died February 18; aged 58.

Yoder, Ralph E., Brooklyn; College of Dental and Oral Surgery, 1909; died September 4; aged 75.

Young, Morgan, M., Capleville, Tenn.; School of Dentistry, Vanderbilt University, 1908; died September 9; aged 65.

Zane, Warden L., Pleasantville, N. Y.; Pennsylvania College of Dental Surgery, 1900; died May 21; aged 72.

Zeller, William G., Scarsdale, N. Y.; College of Dental and Oral Surgery, 1918; died June 11; aged 58.

Zimmer, Emanuel R., Milwaukee; died September 27; aged 83.

Zimmerman, Allen, Los Angeles; College of Dentistry, Ohio Medical University, 1902; died October 9; aged 71.

Directory

OFFICERS

Harold W. Oppice, President ..... 1002 West Wilson Ave., Chicago
LeRoy M. Ennis, President-Elect ..... 4001 Spruce St., Philadelphia
Edward R. White, First Vice-President ..... 921 Bergen Ave., Jersey City, N.J.
Alfred W. Chandler, Second Vice-President ..... Bureau of Medicine and Surgery
..... Navy Dept., Washington, D.C.
M. F. Jarrell, Third Vice-President ..... Box 1986, Alexandria, La.
Percy T. Phillips, Speaker, House of Delegates ..... 18 E. 48th St., New York
Harold Hillenbrand, Secretary ..... 222 E. Superior St., Chicago
C. Willard Camalier, Assistant Secretary ..... 1726 Eye St., N.W., Washington, D.C.
H. B. Washburn, Treasurer ..... Lowry Medical Arts Bldg., St. Paul

BOARD OF TRUSTEES

W. Earle Craig, 1953, Third District ..... 8113 Jenkins Arcade, Pittsburgh
L. H. Jacob, 1953, Eighth District ..... Jefferson Bldg., Peoria, Ill.
James E. John, 1953, Fifth District ..... Medical Arts Bldg., Roanoke, Va.
Daniel F. Lynch, 1953, Fourth District ..... 1678 Primrose Road, N.W., Washington, D.C.
Obed H. Moen, 1953, Ninth District ..... Watertown, Wis.
J. B. Carr, 1952, Seventh District ..... Hume Mansur Bldg., Indianapolis
C. S. Foster, 1952, Tenth District ..... Dows Bldg., Cedar Rapids, Iowa
Charles I. Taggart, 1952, First District ..... 139 Bank St., Burlington, Vt.
Robert P. Thomas, 1952, Sixth District ..... Francis Bldg., Louisville, Ky.
William McGill Burns, 1951, Second District ..... 80 Hanson Place, Brooklyn
R. C. Dalgleish, 1951, Thirteenth District ..... State Capitol, Salt Lake City
Willard Ogle, 1951, Twelfth District ..... 310 N. Ervay St., Dallas, Texas
Fred S. Shandley, 1951, Eleventh District ..... Medical & Dental Bldg., Seattle

BUREAUS

Chemistry: J. Roy Doty, Director, 222 E. Superior St., Chicago
Economic Research and Statistics: B. D. Moen, Director, 222 E. Superior St., Chicago
Library and Indexing Service: Donald A. Washburn, Director, 222 E. Superior St., Chicago
Public Information: Herbert B. Bain, Director, 222 E. Superior St., Chicago

COUNCILS

Constitution and Bylaws: Max E. Ernst, Chm., Lowry Medical Arts Bldg., St. Paul
Dental Education: Henry M. Willits, Chm., Roshek Bldg., Dubuque, Iowa
Shailer A. Peterson, Secy., 222 E. Superior St., Chicago
Dental Health: David W. Brock, Chm., 208 Roosevelt Bldg., St. Louis
Allen O. Gruebbel, Secy., 222 E. Superior St., Chicago
Dental Museum and Registry: Henry A. Swanson, Chm., 1726 Eye St., N.W., Washington, D.C.
Dental Research: J. L. T. Appleton, Chm., 4001 Spruce St., Philadelphia
C. B. Hall, Secy., 1835 Eye St., N.W., Washington, D.C.
Dental Therapeutics: Thomas J. Hill, Chm., 2085 Adelbert Road, Cleveland
J. Roy Doty, Secy., 222 E. Superior St., Chicago
Dental Trade and Laboratory Relations: F. W. Herbine, Chm., 230 N. Fifth St., Reading, Pa.
Earl M. Eaton, Secy., American Trust Bldg., Cedar Rapids, Iowa
Federal Dental Services: R. H. Friedrich, Chm., 960 Park Ave., Plainfield, N.J.

Hospital Dental Service: Stephen P. Mallett, Chm., 358 Commonwealth Ave., Boston
Insurance: Paul W. Zillmann, Chm., 29 Walden Ave., Buffalo
International Relations: Stanley D. Tylman, Chm., 55 E. Washington St., Chicago
Journalism: Charles A. Wilkie, Chm., 1 Hanson Place, Brooklyn
Judicial Council: Ernest G. Sloman, Chm., 344 14th St., San Francisco
Legislation: E. Harold Gale, Chm., 142 Washington Ave., Albany, N.Y.
Francis J. Garvey, Secy., 222 E. Superior St., Chicago
Membership: H. C. Jarvis, Chm., Mercantile Library Bldg., Cincinnati
National Board of Dental Examiners: Thomas J. Birkbeck, Chm., Milton, Ore.
Shailer A. Peterson, Secy., 222 E. Superior St., Chicago
Relief: Leo W. Kremer, Chm., 55 E. Washington St., Chicago
M. C. Hansen, Secy., Racine, Wis.
Scientific Session: William A. Garrett, Chm., Candler Bldg., Atlanta, Ga.
Robert G. Kesel, Secy., 808 S. Wood St., Chicago

ADVISORY COMMITTEES

Bureau of Chemistry: Philip Jay, Chm., 715 S. Forest Ave., Ann Arbor, Mich.
Bureau of Economic Research and Statistics: L. M. FitzGerald, Chm., Roshek Bldg., Dubuque, Iowa
Bureau of Library and Indexing Service: John E. Gurley, Chm., 350 Post St., San Francisco
Bureau of Public Information: C. H. Jamieson, Chm., David Whitney Bldg., Detroit

SECTION CHAIRMEN

Clinics: Marcus H. Burton, 1149 16th St., N.W., Washington, D.C.
Dental Public Health: Carl L. Sebelius, Department of Public Health, Nashville, Tenn.
Operative Dentistry: Rex Ingraham, 122 E. Sixteenth St., Los Angeles
Oral Surgery: James R. Cameron, 269 S. Nineteenth St., Philadelphia 3
Orthodontics: J. William Adams, 1121 W. Michigan St., Indianapolis
Partial Denture Prosthesis: Paul A. Edmand, 55 E. Washington St., Chicago
Pedodontics and Oral Hygiene: George W. Teuscher, 311 E. Chicago Ave., Chicago 11
Periodontia: Roy O. Elam, 605 Medical Arts Bldg., Nashville, Tenn.
Practice Management: Cecil H. Bliss, 503 Fifth St., Sioux City, Iowa
Research: Helmut A. Zander, Tufts College Dental School, 416 Huntington Ave., Boston
Roentgenology: L. R. Main, 3556 Caroline St., St. Louis
Scientific Exhibits: J. M. Wisan, Veterans Administration Hospital, Brooklyn

THE JOURNAL OF THE AMERICAN DENTAL ASSOCIATION
222 East Superior Street, Chicago 11, Illinois
WHitehall 4-6730

LON W. MORREY, *Editor* JOHN J. HOLLISTER, *Business Manager*

All expressions of opinions and all statements of supposed facts are published on the authority of the writer over whose signature they appear, and are not to be regarded as expressing the views of the American Dental Association, unless such statements or opinions have been adopted by the Association. *Articles* are accepted with the understanding that they have not been published previously and that they are submitted solely to THE JOURNAL. *Advertising copy* must conform to the official standards established by the American Dental Association. *Notice of change of address* should be received one month before the change is to be effective. *Orders for reprints of* JOURNAL articles must be received by the Business Manager's office not later than the 15th of the month of issue in order to secure advantage of the lowest possible prices. Orders received after this date are subject to special quotation.

Announcements

AMERICAN DENTAL ASSOCIATION

Ninety-Second Annual Session	Oct. 15-18, 1951	Washington, D. C.
Ninety-Third Annual Session	Sept. 8-11, 1952	St. Louis
Ninety-Fourth Annual Session	Sept. 28-Oct. 1, 1953	Cleveland

MEETINGS OF STATE SOCIETIES

State	Date	Place	Secretary	Address
Alabama	April 16-18	Birmingham	G. W. Matthews	1922 Tenth Ave., S., Birmingham 5
Alaska			C. N. Hoveland	Anchorage
Arizona	April	Tucson	H. G. DeWolf	Valley National Bank Bldg., Tucson
Arkansas	April 8-11	Little Rock	D. M. Hamm	White Bldg., Clarksville
California	April 16-18	San Francisco	L. R. Ludwigsen	450 Sutter St., San Francisco
S. California	April 2-4	Los Angeles	C. A. Moss	1401 S. Hope St., Los Angeles
Colorado			R. A. Downs	724 Republic Bldg., Denver 2
Connecticut	April 25-27	New Haven	E. S. Arnold	37 Linnard Rd., W. Hartford
Delaware			L. Kreshtool	815 West St., Wilmington
District of Columbia	Mar. 11-14	Washington	K. H. Wood	202-1835 Eye St., N. W., Washington
Florida			L. M. Schulstad	Professional Bldg., Bradenton
Georgia			J. M. Heard, Jr.	Persons Bldg., Macon
Hawaii	Sept. 27-29	Kailua	J. H. Dawe	810 N. Vineyard St., Honolulu 17
Idaho		Lewiston	H. M. Klaaren	Breier Bldg., Lewiston
Illinois	May 7-10	Peoria	P. W. Clopper	623 Jefferson Bldg., Peoria 2
Indiana	May 21-23	Indianapolis	E. E. Ewbank	Kingman
Iowa	May 7-9	Des Moines	H. I. Wilson	639 Insurance Exchange Bldg., Des Moines
Kansas	May 6-9	Wichita	F. A. Richmond	Brotherhood Bldg., Kansas City
Kentucky	April 2-4	Louisville	A. B. Coxwell	1976 Douglass Blvd., Louisville
Louisiana	April 26-28	New Orleans	J. S. Bernhard	407 Medical Arts Bldg., Shreveport
Maine	June 28-30	Rockland	F. P. Gilley	31 Central St., Bangor
Maryland	May 7-9	Baltimore	E. L. Pessagno, Jr.	415 Medical Arts Bldg., Baltimore 1
Massachusetts	April 29-May 2	Boston	H. E. Tingley	12 Bay State Road, Boston
Michigan	April 16-18	Detroit	F. Wertheimer	Michigan Dept. of Health Lansing
Minnesota	Feb. 19-21	Minneapolis	C. V. E. Cassel	242 Lowry Medical Arts Bldg., St. Paul
Mississippi	April 29-May 2	Jackson	H. M. Campbell	Tupelo
Missouri	April 1-4	St. Louis	R. R. Rhoades	201 Merchants Bank Bldg., Jefferson City
Montana	May 3-5	Billings	C. S. Renouard	304 Phoenix Bldg., Butte
Nebraska	May 14-16	Lincoln	F. A. Pierson	Federal Security Bldg., Lincoln
Nevada	June 1, 2	Reno	W. R. Bell	Medical Arts Bldg., Reno
New Hampshire			F. E. Williams	814 Elm St., Manchester
New Jersey	April 11-13	Atlantic City	J. G. Carr	407 Cooper St., Camden
New Mexico	May 21-23	Santa Fe	J. S. Eilar	First National Bank Bldg., Albuquerque
New York	May 7-11	Buffalo	C. A. Wilkie	1 Hanson Place, Brooklyn
North Carolina	April 30-May 2	Pinehurst	B. N. Walker	Liberty Life Bldg., Charlotte
North Dakota	May 17-20	Grand Forks	J. H. Lunday	Fargo
Ohio			E. G. Jones	185 E. State St., Columbus
Oklahoma	April 15-18	Oklahoma City	R. C. Calkin	109½ W. Oklahoma, Guthrie
Oregon	Mar. 3-5, 1952	Portland	H. C. Fixott, Jr.	308 Selling Bldg., Portland
Panama Canal Zone			L. F. Baranowski	P. O. Box 102, Ft. Kobbe
Pennsylvania	Sept. 11-14	Pittsburgh	M. D. Zimmerman	217 State St., Harrisburg
Puerto Rico			J. F. Suarez	Box 3863, Santurce
Rhode Island			A. F. Sullivan	171 Westminster St., Providence 3
South Carolina	May 6-8	Charleston	J. R. Owings	201 E. North St., Greenville
South Dakota	May 20-22	Watertown	E. W. Elmen	Sioux Falls
Tennessee	May 7-9	Nashville	E. J. Justis	Exchange Bldg., Memphis

State	Date	Place	Secretary	Address
Texas	April 30-May 5	San Antonio	W. Ogle	410 N. Ervay St., Dallas
Utah		Ogden	B. P. McBride	Medical Arts Bldg., Salt Lake City
Vermont	May 20-22	Woodstock	J. A. Larrow	Middlebury
Virginia	April 9-11	Richmond	J. E. John	804 Medical Arts Bldg., Roanoke
Washington			C. R. Flood	1130 Medical-Dental Bldg., Seattle 1
West Virginia	July 16-18	White Sulphur Springs	A. B. Drake	508 West Virginia Bldg., Huntington 1
Wisconsin	Mar. 27-29	Milwaukee	R. A. Mason	964 N. 27th St., Milwaukee
Wyoming			T. J. Drew	State Capitol, Cheyenne

MEETINGS OF STATE BOARDS OF DENTAL EXAMINERS

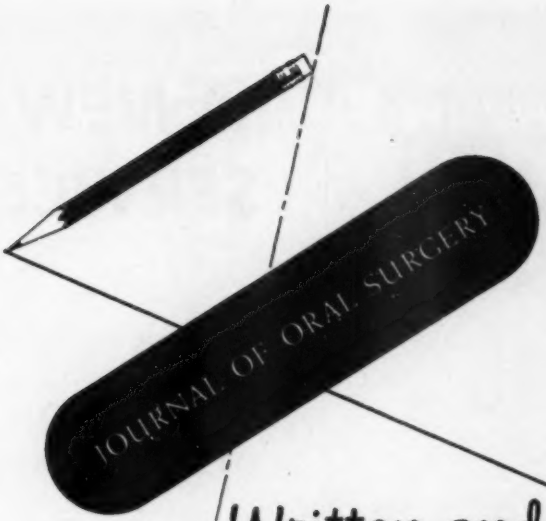
State	Date	Place	Secretary	Address
Alabama	June 18	Birmingham	M. D. Edwards	120 Adams, Montgomery
Alaska	Aug. 6-11	Ketchikan	J. H. Geyer	Juneau
Arizona			R. K. Trueblood	25 N. Second Ave., Glendale
Arkansas			H. E. Hanna	Wilson Bldg., El Dorado
California	Feb. 5	San Francisco	K. I. Nesbitt	507 Polk St., San Francisco 2
Colorado			W. D. McCarthy	724 Republic Bldg., Denver 2
Connecticut			C. G. Brooks Recorder	302 State St., New London
Delaware			P. K. Musselman	143 W. Main St., Newark
District of Columbia			W. M. Falls	1801 Eye St., N. W., Washington 6
Florida	July 9-14*		A. W. Kellner	P. O. Box 155, Hollywood
Georgia			R. C. Coleman	State Capitol Bldg., Atlanta 3
Hawaii			H. L. Houvener	7-8 Pantheon Bldg., Honolulu
Idaho			F. L. Luce	510 First National Bank Bldg., Boise
Illinois	June 26-29	Chicago	W. A. McKee	503 Wood Bldg., Benton
Indiana	June 19-22	Indianapolis	C. A. Frech	Gary National Bank Bldg., Gary
Iowa	May 21-25*	Iowa City	H. M. Willits	719 Roshek Bldg., Dubuque
Kansas			G. L. Teall	Hiawatha
Kentucky			R. I. Todd	Western Union Bldg., Richmond
Louisiana			A. R. deNux	Marksville
Maine			R. A. Derbyshire	Box 387, Skowhegan
Maryland			W. D. Day	3811 Hadley Square E., Baltimore 18
Massachusetts	June 25-29‖	Boston	J. C. Wilson	33 State House, Boston
	June 27-29‡‡			
Michigan			J. L. Champagne	3714 W. McNichols Road, Detroit 21
Minnesota			F. A. Larson	1632 Washington St., N. E., Minneapolis
Mississippi			J. C. Boswell	508 Lamar Bldg., Jackson
Missouri			R. R. Rhoades	Central Trust Bldg., Jefferson City
Montana			P. M. Feda	Box 865, Helena
Nebraska			C. A. Bumstead	924 Stewart Bldg., Lincoln
Nevada			G. C. Steinmiller	Masonic Temple, Reno
New Hampshire	June	Boston	J. B. Brown	5 N. State St., Concord
New Jersey	June 18, 19	New York††	W. A. Wilson	150 E. State St., Trenton 8
	June 25, 26	Philadelphia††		
	June 27-29	Trenton**		
New Mexico			J. J. Clarke, Sr.	Artesia
New York			D. W. Beier	23 S. Pearl St., Albany 7
North Carolina	June 25	Raleigh	F. O. Alford	1109 Liberty Life Bldg., Charlotte 2
North Dakota	July 9-12	Fargo	A. B. Crabtree	Ellendale
Ohio	June 25-29	Columbus	E. D. Lowry	79 E. State St., Columbus
Oklahoma			N. D. Griffith	509 Medical Arts Bldg., Oklahoma City 2
Oregon			A. F. Davis	306 Public Service Bldg., Portland
Pennsylvania	May 21-23† and	Pittsburgh	Exec. Secy. R. E. V. Miller	Northampton National Bank Bldg., Easton
	May 22‡			
	June 4-6† and	Philadelphia		
	June 5‡			
	June 18-20† and	Philadelphia		
	June 20‡			
	June 21-23**	Philadelphia and Pittsburgh		
Rhode Island			F. M. Hackett	State Office Bldg., Providence
South Carolina	July 4-7	Columbia	E. G. Bumgardner	1517 Hampton St., Columbia
South Dakota			R. W. Ellis	Salem
Tennessee			F. S. Maxey	804 Bennie Dillon Bldg., Nashville 3

State	Date	Place	Secretary	Address
Texas			R. T. Weber	312 Capital National Bank Bldg., Austin
Utah			J. J. Dalpiaz	Helper
Vermont			F. A. Reid	Windsor
Virginia	June 12	Richmond	J. M. Hughes	715 Medical Arts Bldg., Richmond 19
Washington	June 18-22	Seattle	J. B. Kiefer, Jr.	510 Cobb Bldg., Seattle
West Virginia	June 25-27	West Liberty	C. A. Laughlin	613 Prunty Bldg., Clarksburg
Wisconsin	June 18*	Milwaukee	S. F. Donovan	Tomah
Wyoming			W. J. Ryan	208 Boyd Bldg., Cheyenne

*Dentistry and dental hygiene.
†Dental clinical examinations.
‡Dental hygiene clinical examinations.
§Dental examinations.
**Written examinations.
††Clinical examinations.
‡‡Hygienists' examinations.

OTHER MEETINGS

Name	Date	City	Secy. or Chm.	Address
Academy for Plastics Research	Feb. 2	Chicago	L. W. Harris	25 E. Washington St., Chicago
Academy of Denture Prosthetics, Annual Meeting	April 30-May 6	Washington, D. C.	I. L. Furnas Secy.	928 Silverado St., La Jolla, Calif.
American Academy of Restorative Dentistry	Feb. 4	Chicago	K. A. Bignell Secy.	25 E. Washington St., Chicago
American Association of Endodontists, Annual Meeting	Feb. 3, 4	Chicago	N. W. Burkman Secy.	525 Merrill St., Birmingham, Mich.
American Association of Orthodontists, Annual Meeting	April 23-26	Louisville, Ky.	G. R. Moore Secy.	919 Oakland Ave., Ann Arbor, Mich.
American Association of Public Health Dentists	Feb. 4	Chicago	C. L. Sebelius Secy.	Tennessee Dept. of Public Health, Nashville, Tenn.
American Board of Oral Surgery	April 7-10	Chicago	L. M. FitzGerald Secy.	718 Roshek Bldg., Dubuque, Iowa
American Board of Pedodontics	Feb. 8-10	St. Louis	R. L. Ireland Secy.	305 Andrews Hall, Lincoln 8, Neb.
American College of Dentists	Feb. 4	Chicago	O. W. Brandhorst Secy.	4952 Maryland Ave., St. Louis
American Dental Society of Europe	Aug. 1-4	Lausanne, Switzerland	F. D. Derrick Secy.	140 Park Lane, London, W.1.
American Denture Society	Feb. 3, 4	Chicago	A. L. Roberts Secy.	Aurora National Bank Bldg., Aurora, Ill.
Chicago Dental Society Midwinter Meeting	Feb. 5-8	Chicago	K. S. Richardson Exec. Secy.	30 N. Michigan Ave., Chicago 2
Greater Philadelphia, Annual Meeting	Jan. 30-Feb. 1	Philadelphia	R. Adams Secy.	710 W. York St., Philadelphia
International College of Dentists	Feb. 4	Chicago	E. S. Best Secy.	801 Medical Arts Bldg., Minneapolis 2
National Board of Dental Examiners	April 9, 10		Shailer A. Peterson Secy.	222 E. Superior St., Chicago 11
Northeastern Society of Orthodontists, Annual Meeting	Mar. 5, 6	New York	O. Jacobson Secy.	35 W. 81st St., New York
Pacific Coast Dental Conference (Eighth)	June 25-28	Seattle	C. R. Flood Secy.	605 Medical-Dental Bldg., Seattle 1
Southeastern Society of Oral Surgeons, Second Annual Meeting	Mar. 2, 3	New Orleans	G. W. Matthews Editor	1922 Tenth Ave., S., Birmingham, Ala.
Southern Academy of Oral Surgery, First Annual Convention	Mar. 24, 25	Atlanta, Ga.	R. H. Roux, Jr. Secy.	112 W. Jones St., Savannah, Ga.
Thomas P. Hinman Mid-Winter Clinic, Thirty-Ninth Annual Meeting	Mar. 25-28	Atlanta, Ga.	T. Morrison, Sr. Gen. Chm.	490 Peachtree St., N. E., Atlanta, Ga.



Written and edited for you

The JOURNAL of ORAL SURGERY is packed with practical articles for the general practitioner as well as the specialist. This informative, well-illustrated Quarterly is devoted to "the art and science of oral surgery," contains invaluable scientific articles, case reports, queries and comments, current literature, reviews and announcements.

Recently redesigned from cover to cover, it is inviting and easy to read. Edited by Reed O. Dingman, MD, DDS, and published by the American Dental Association *to meet your needs* and *to keep you posted* on all that is new in theory and practice. Have your subscription start with the current issue.

JOURNAL OF ORAL SURGERY

Send in your subscription today
Only $5 per year
American Dental Association
222 E. Superior St., Chicago 11, Ill.

SAFE EFFECTIVE
GERMICIDAL SOLUTION

Parker's
GERMICIDAL TABLETS

Just two Parker's Germicidal tablets dropped in a pint of water and stirred, quickly disintegrate to produce a 1:1000 solution of stable, active germicidal solution—A. D. A. approved. Then, instruments need only to be washed free of pus, blood, protein material or soap and immersed in the germicidal solution for 15 minutes to achieve safe and complete chemical disinfection.

- **ECONOMICAL**—One bottle of 80 tablets ($6.50) makes five gallons of germicidal solution costing $1.30 a gallon 16¼¢ a pint.
- **TIME-SAVER**—No time lost waiting for water to boil or instruments to cool.
- **SPACE-SAVER** — No bulky bottles of liquid to store — or to pour.
- **NON-CORROSIVE** — No anti-rust tablets necessary.
- **NON-TOXIC, NON-IRRITATING** — Makes an excellent hand sanitizing rinse for use between patients, or for the cleaning and disinfection of head rests, arm rests, bowls, cabinet drawers, etc.

Bottles of 80 Tablets $6.50
(Equivalent to 5 gallons)

Made by A. S. PARKER CO., Reno, Pa.
Distributed by
B. G. HATCH CO., Brooklyn 1, N. Y.

A NEW SERVICE

•

A Quarterly Cumulative

INDEX TO DENTAL LITERATURE

in the English Language

Each issue after the first contains all the material of the preceding issues. A handy reference for everyone who has occasion to refer to dental literature.

Sold on a subscription basis for $30 a year. Additional subscriptions to the same subscriber, $15.

Send in your order today to

AMERICAN DENTAL ASSOCIATION
Subscription Department
222 EAST SUPERIOR STREET
CHICAGO 11, ILLINOIS

• ONLY *fastcrown*

PROVIDES **ALL** THESE ADVANTAGES YOU LOOK FOR WHEN YOU SWITCH FROM A SILICATE TO A FILLING PLASTIC!

WE shall be glad to send you — on request — detailed authoritative proof that *only* FASTCROWN offers you *ALL* these qualities.

ACRALITE SUPERIOR PRODUCTS For MODERN DENTISTRY
ACRALITE CO., Inc., 230 W. 41 St., New York 18, N. Y.

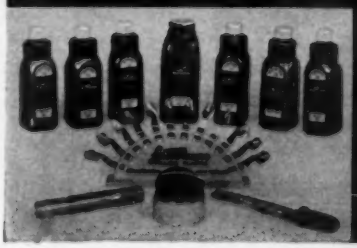
fastcrown HAS BEEN PROVED NON IRRITATING TO THE PULP!

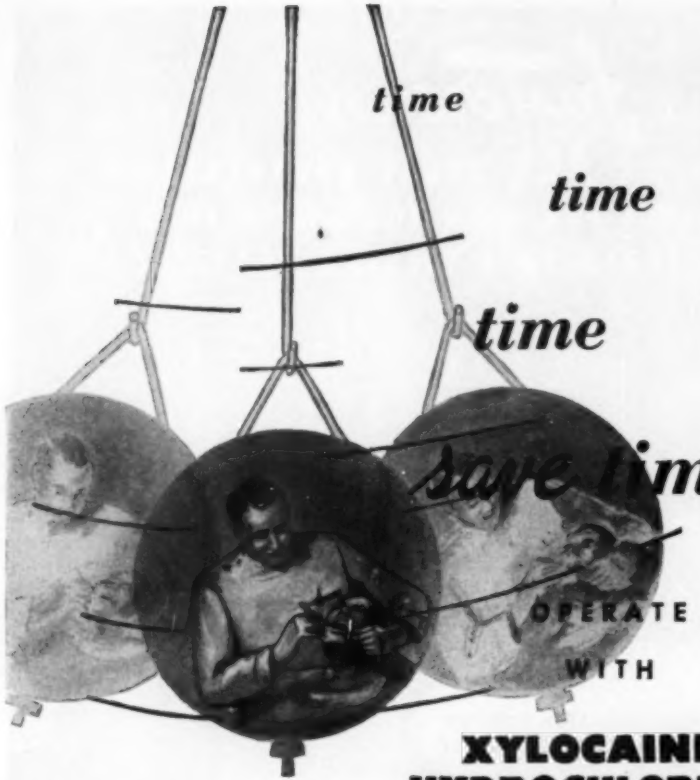
fastcrown HAS MINIMUM DIMENSIONAL CHANGE!

fastcrown RESTORATIONS SHOW NO COLOR CHANGE!

fastcrown RESTORATIONS *WILL NOT WASH OUT!*

UTILITY PACKAGE
8 popular shades of powder; 1 liquid; shade guide; mixing and measuring equipment; shade and technic instructions $19.85





XYLOCAINE HYDROCHLORIDE

ASTRA

(Brand of Lidocaine Hydrochloride)

Dispensed for dentistry in 1.8 cc cartridges. 2% solution available without epinephrine; and with epinephrine 1:100,000 or 1:50,000.

the new, quick-acting local anesthetic that cuts minutes from the time lag between injection and onset of anesthesia. Anesthetic effect is profound, widely diffused, and well within clinical ranges of tolerance.

Bibliography sent upon request.

ASTRA

PHARMACEUTICAL PRODUCTS, INC.
WORCESTER, MASS. U. S. A.

SOLD THROUGH LEADING DENTAL SUPPLY HOUSES

please your patients with

BOOS-PROCESSED GOLD BRIDGES

It is a great pleasure to watch a patient as he discovers how right you were in promising that his new bridge would satisfy his basic requirements for natural appearance and feeling, comfort and durability, talking and eating without handicap. When you send your cases to BOOS, you can be sure that expert processing will follow up your own skillful preparatory work to produce just such a case.

If you have not yet discovered the difference BOOS processing makes—the actual chair time it can save you and the greater satisfaction it gives your patients—plan to send your next case to BOOS. We are confident a single trial will convince you that you will benefit by sending all your cases to BOOS.

THESE 8 POINTS assure superior results

- Precise understanding of your prescription and its relation to the problem at hand
- Initial survey and design by executive experts
- Cases entrusted only to specialists with aptitude and years of experience in building bridges
- BOOS bridges engineered to withstand maximum stresses with minimum strain on abutment teeth
- Especial care taken by BOOS craftsmen to restore natural tooth anatomy, contact points, and margins
- Comfort and esthetics enhanced by incorporating symmetrical alignment with natural teeth, full lingual anatomy, and precise color blending
- Only the most durable, proven materials used
- The most advanced processing technics and equipment assures the best out of all materials

HENRY P. BOOS DENTAL LABORATORIES, Inc.
808 NICOLLET AVENUE • MINNEAPOLIS 2, MINNESOTA

Branch Laboratories: Medical Arts Bldg., Duluth, Minn.
Equitable Bldg., Des Moines, Iowa

"Is it too late, Doctor?"

Fortunately, it's *not* too late for more and more Americans who are going to their doctors *in time* . . . at the first sign of any one of the seven danger signals which *may* mean cancer: (1) any sore that does not heal (2) a lump or thickening, in the breast or elsewhere (3) unusual bleeding or discharge (4) any change in a wart or mole (5) persistent indigestion or difficulty in swallowing (6) persistent hoarseness or cough (7) any change in normal bowel habits.

By showing Americans what they can do to protect themselves and their families against cancer, the American Cancer Society is saving thousands of lives *today*. By supporting science and medicine in the search for the causes and cures of cancer, the Society hopes to save countless more *tomorrow*. To guard yourself, and those you love, against cancer, call the nearest office of the American Cancer Society or address your inquiry to "Cancer" in care of your local Post Office.

American Cancer Society

Just Released!

NEW FOURTH EDITION

Essentials of ORAL SURGERY

FULLY REVISED AND BROUGHT UP-TO-DATE
THIS CLASSIC IS USEFUL BOTH TO STUDENTS AND DENTAL PRACTITIONERS

There is much more to this classic text than the title implies. In addition to the expected coverage of dental surgery it contains a wealth of information for the dental practitioner and discusses a score of problems he meets daily in his work. It gives him a good background in pathology and diagnosis which he can apply to major surgical conditions, and it presents minor surgical conditions in detail.

Cancer of the tongue and tonsil, cleft palate, cysts of the jaws, fractures, cellulitis, gangrene, necrosis of bone, bony fistulas, thyro-glossal cysts—these are only some of the conditions which are thoroughly covered.

Everyday problems such as infections, inflammation, hemorrhage, shock, wounds and injuries of the soft tissues, fractures of the jaws, dislocations, chronic infections, tumors, affections of the salivary glands and ducts—of the tongue and lips and the facial nerves—all these are well handled with thorough discussion of treatment.

Several new illustrations have been added to this Fourth Edition and the section on cleft palate and harelip has been entirely rewritten, with particular emphasis on treatment by the co-ordinated efforts of specialists in several fields.

By VILRAY PAPIN BLAIR, A.M., M.D., F.A.C.S., Professor Emeritus of Clinical Surgery in the School of Medicine and Professor Emeritus of Oral Surgery in the School of Dentistry, Washington University, St. Louis; and ROBERT HENRY IVY, M.D., D.D.S., F.A.C.S., Professor of Plastic Surgery in the School of Medicine and Graduate School of Medicine, and Professor of Maxillofacial Surgery in the School of Dentistry, University of Pennsylvania, Philadelphia.

With the collaboration of JAMES BARRETT BROWN, M.D., F.A.C.S. 636 pages, 485 illustrations. Price, $8.00.

Order Form

THE C. V. MOSBY COMPANY ADA 2-51
3207 Washington Blvd.
St. Louis 3, Missouri

Please send me Blair-Ivy's ESSENTIALS OF ORAL SURGERY, New Fourth Edition. ($8.00)
☐ Enclosed find check. ☐ Charge my account.

Name_____

Address_____

A LAXATIVE FOR *judicious* THERAPY

because of its

Authoritative Endorsement

Phospho-Soda (Fleet)'s* endorsement by modern clinical authorities stems in great measure from its gently thorough action—free from disturbing side effects. That, too, is why so many practitioners are relying increasingly on this safe, dependable, ethical medication for judicious laxative therapy. Liberal samples on request.

*Phospho-Soda (Fleet) is a solution containing in each 100 cc. sodium biphosphate 48 Gm. and sodium phosphate 18 Gm. Both Phospho-Soda and Fleet are registered trade marks of C. B. Fleet Company, Inc.

C. B. FLEET CO., INC. • LYNCHBURG, VIRGINIA

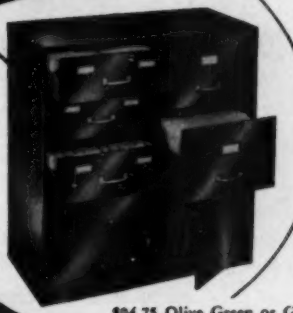
ACCEPTED FOR ADVERTISING BY THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

NEW!

THE "DE-LUXE *Efficiency*" FILE

3 FAVORITE FILES *Exclusively* FOR DOCTORS

One of these files will suit your purposes exactly. For efficiency in your office order one today.



$94.75 Olive Green or Gray ($103.75 West of Miss.)

$111.25 Walnut or Mahogany ($120.25 West of Miss.)

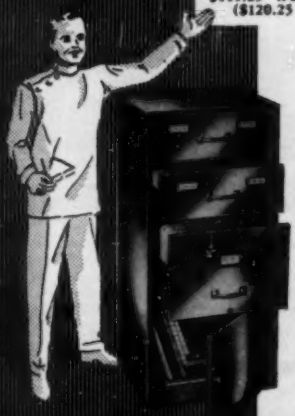
1. The NEW "De-Luxe Efficiency" will hold ALL the records of even the busiest doctor's office. Three card drawers for 5" x 8" or 4" x 6" records. Two filing drawers for papers up to size 8½" x 14". Two roomy storage compartments with lock and key for books, drugs, etc. It is 40" high, 37" wide, 18" deep.

THE "*Giant*" FILE

2. Ideal for large practices, groups, clinics, etc. Holds more than 20,000 5" x 8" or 4" x 6" records. All drawers operate on ball-bearing rollers. Dimensions: 40" high, 18" wide, 16" deep.

$67.50 Olive Green or Gray ($72.25 West of Miss.)

$80.50 Walnut or Mahogany ($85.25 West of Miss.)



3. The "Efficiency" is the most popular of all doctors' files: a compact and economical unit. It holds 8,000 5" x 8" or 4" x 6". records, thousands of papers up to 8½" x 14". Storage compartment holds books, drugs valuables, etc. . . . under lock and key. Dimensions: 40" high, 18" wide, 16" deep.

$59.75 Olive Green or Gray ($64.50 West of Miss.)

$71.75 Walnut or Mahogany ($76.50 West of Miss.)

THE "*Efficiency*" FILE

All prices subject to change without notice.

ROFESSIONAL PRINTING COMPANY, INC.

America's Largest Printers to the Professions

202-208 TILLARY ST., BROOKLYN 1, N. Y.

STATIONERY - BUSINESS PRODUCTS
PRINTING - RUBBERS - FILES & SUPPLIES

PROFESSIONAL PRINTING CO., INC.
202-208 Tillary St., Brooklyn 1, N. Y.

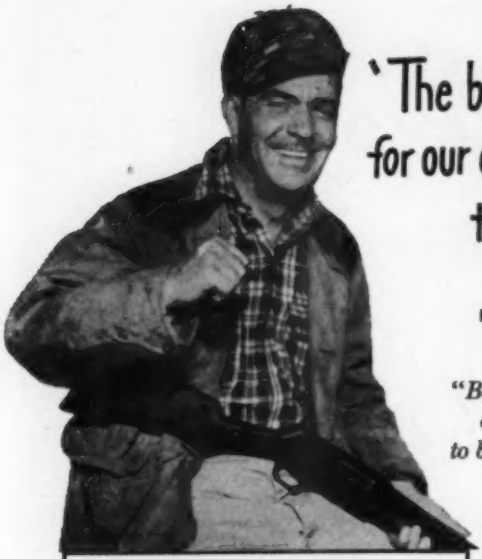
Gentlemen: Please send me:

☐ "Efficiency" File ☐ "Giant" File
☐ "De-Luxe Efficiency" File
☐ Green ☐ Gray ☐ Walnut ☐ Mahog.
Send ☐ C.O.D. ☐ Check enclosed
☐ Fully descriptive File Folder

Dr._____

_____

6-2-1



'The bonds Lila and I bought for our country's defense helped us to own our own home!'

HOW U. S. SAVINGS BONDS PAID OFF FOR SELDEN AND LILA ROBINSON OF DENVER, COLORADO

"Bond saving enabled me to become a home owner," says Selden Robinson, "then to buy a better house, and to replace our old car with a new one."

"I enrolled in the Payroll Savings Plan before the war at the Stearns-Roger Manufacturing Co. I was buying two $18.75 bonds a month toward a dream home Lila and I had planned."

"The $4,000 we've saved paid $2,800 on our first home, paid the difference when we traded this house for a new brick one, and paid $500 on our car. Bonds will send our girls to college, too!"

The Robinsons' story can be your story, too!

Your dream can come true, just as the Robinsons' did. *Start now!* It's easy! Just take these three simple steps:

1. Put saving first before you spend a penny of your income.

2. Decide to save a regular amount *systematically*. Even a small sum saved this way becomes large amazingly soon!

3. Start saving automatically by signing up *today* in the Payroll Savings Plan where you work or the Bond-A-Month Plan where you bank.

Your savings will grow rapidly. And you'll be providing security not only for yourself, your family, and the free way of life that's so important to us all.

FOR YOUR SECURITY, AND YOUR COUNTRY'S TOO, *SAVE NOW*—
THROUGH REGULAR PURCHASE OF U. S. SAVINGS BONDS!

Your government does not pay for this advertisement. It is donated by this publication and Foote, Cone & Belding in cooperation with the Advertising Council and the Magazine Publishers of America.

TABLETS
BUFFERED
Crystalline
Penicillin G
Potassium

CSC

250,000 UNITS

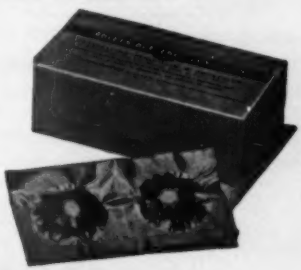
Prophylactically Following Exodontia

In exodontia, the value of prophylactic penicillin administration to patients with rheumatic heart disease or severe infection is well established. Given before and following extraction, penicillin greatly reduces the incidence of blood-borne infection and minimizes the chances for secondary complications both *in situ* and in distant structures.

Tablets Buffered Penicillin-C.S.C., providing 250,000 units of potassium penicillin G per tablet, are an excellent means of instituting prophylactic therapy. A single tablet 4 to 6 times daily is usually adequate.

The oral administration of penicillin has also been recommended pre- and postoperatively when there is danger of systemic infection following surgery, especially in the case of infected tonsils, periapical abscesses, etc. For this purpose a minimum of 750,000 units should be given during the 24 hours before operation and 500,000 to 1,000,000 units daily in divided doses every 4 hours after operation for 3 or 4 days.

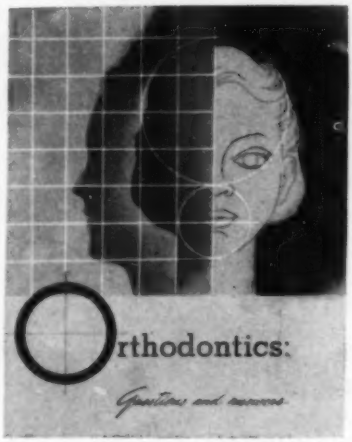
At your prescription pharmacy in boxes of 10 tablets, each tablet individually sealed in foil.



C.S.C. Pharmaceuticals

A DIVISION OF COMMERCIAL SOLVENTS CORPORATION, 17 EAST 42ND STREET, NEW YORK 17, NEW YORK

Announcing . . .



A NEW PAMPHLET on ORTHODONTICS

Produced by the Council on Dental Health after consulting with recognized authorities in the field of orthodontics.

Orthodontics answers many of the questions commonly asked by parents about the child who needs orthodontic care. It presents information on:

- **Healthy and attractive teeth as an asset**
- **Prevalence of malocclusion**
- **Causes of malocclusion**
- **Prevention or correction of malocclusion**
- **Factors governing treatment**

—PRICES—

25 copies	**$1.30**
50 copies	**2.30**
100 copies	**3.95**

A SAMPLE COPY ON REQUEST

AMERICAN DENTAL ASSOCIATION

222 East Superior Street **Chicago 11, Illinois**

Let us tell you how your patients react to seeing this Reserve Plan sign in your Dental office.

A POST-PAYMENT DENTAL PLAN

Here is an *ethical, efficient, economical* proven credit plan in use by hundreds of doctors. The Reserve Plan is spreading everywhere in popularity. Every week new doctors are using this unique plan for their own benefit, as well as their patients. We purchase your patients' notes. You receive cash. No red tape. Relieves all worries over credit and delinquent accounts. A life insurance feature in the plan protects both doctor and his patients without charge.

Reserve Plan Inc

TRADE MARK

922 Walnut Street **Kansas City 6, Missouri**

Assets over $1,000,000.00

References: Commerce Trust Bank, Kansas City, Mo. — Better Business Bureau — Dun and Bradstreet

For complete information without obligation mail this coupon TODAY!

RESERVE PLAN INC. Dept., 13-2
922 Walnut St., Kansas City 6, Missouri

Please (call on me) (mail me information) about your plan for PURCHASING dental notes. The most convenient time to see me is between the hours of_____ and_____ on the following days of the week_____.
No obligation to me, of course.

NAME_____

ADDRESS_____

CITY_____ STATE_____

Tops in taste

YOUR patients will be pleasantly surprised by the new, better-tasting NEMBUTAL Elixir. It is not delicious, of course, but considering that it contains a bitter drug, it is palatable indeed. Even children can take it straight without difficulty. One teaspoonful represents 15 mg. (¼ gr.) of short-acting NEMBUTAL Sodium.

Administration of the better-tasting NEMBUTAL Elixir will simplify the problem of calming the apprehensive patient. Short-acting NEMBUTAL provides rapid sedation with marked clinical safety, and brings the patient to your chair in a cooperative mood.

The new NEMBUTAL Elixir is available through your usual source of supply in 1-pint shelf-saving and 1-gallon bottles. Try it in your next few difficult cases. Abbott

REMEMBER: In equal oral doses, no other barbiturate provides QUICKER, BRIEFER, MORE PROFOUND EFFECT than NEMBUTAL

The Modern, Pleasant Way to Practice Dentistry

The new trend is toward operating in the seated position. Schools and authorities of the profession are advocating this modern way to operate.

Certainly — the dentist should take advantage of every opportunity to make his work more enjoyable. Now . . . all the objections and limitations that were involved in operating in the seated position are eliminated.

The Posture Comfort Chair is the direct result of constant effort to provide the dentist with a chair that is ADAPTABLE. More and more dentists are proving to themselves that the Posture Comfort Chair is the answer.

The arcuate body support relieves the back. The form fitting saddle seat affords complete comfort. The foot rest and multiple adjustments combine to make the Posture Comfort Chair functional — a "custom built" chair that is the best money can buy.

ILLUSTRATED BOOKLET

Ask your dealer for your copy. If he is out of stock, write to us and we will send one by return mail.

Childs Manufacturing Company
Macon, Georgia

YOUR TEETH...

how they grow

is now available

A PAMPHLET for use in the dental office and schoolroom . . . to help the dentist and the teacher present dental health information on . . .

- Number of teeth
- Function, shape, structure
- Development
- Care of the teeth

Prices

25 copies	$3.40
50 copies	5.80
100 copies	9.95

A sample copy on request

AMERICAN DENTAL ASSOCIATION

222 East Superior Street **Chicago 11, Illinois**

Castle
ANNOUNCES THE NEW
"777"
SPEED-CLAVE
(Pressure Steam)

High Speed—
Low Cost Autoclave

AN IMPORTANT ADVANCE IN STERILIZING SAFETY

Here at last is the autoclave for every office—the Castle "777" Speed-Clave. It's faster than boiling, easier than boiling, safer than boiling, and cheaper than boiling. The security of 100% sterilization—which only an autoclave can give—now becomes practicable for every office in this compact, fast, inexpensive, automatic autoclave.

High Speed

The Speed-Clave reaches the spore-killing temperature (253°F., 16½ lbs.) from a warm start in 3 minutes. Instruments are then 100% sterile in 10 minutes (6 minutes at 260°F., 20 lbs.). Compare this with the time required to start a boiler, with at least 10 minutes more to kill only common bacteria, not spores.

Low Cost

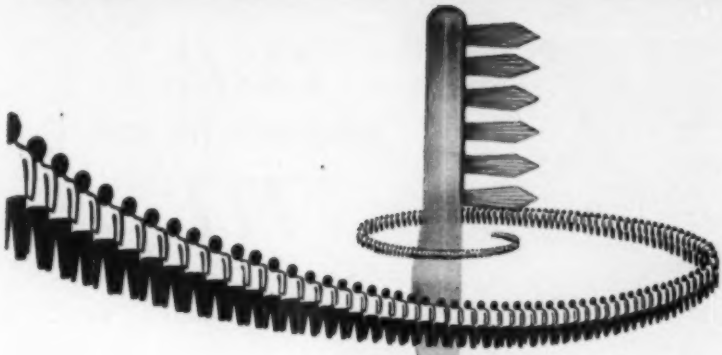
Complete safety in every office is now possible at no higher price than a modern cabinet model boiling sterilizer. What's more, the Speed-Clave provides economical sterilization. You can buy unsterile dressings (about a 40% saving), and instrument replacement is reduced—less dulling, rusting, and corrosion of instruments.

100% Safety For ALL Materials

Instruments	Gloves and Rubber Materials
Syringes and Needles	Cotton and Absorbent Goods

See your Castle dealer or write: Wilmot Castle Co., 1104 University Ave., Rochester 7, N. Y.

Castle LIGHTS and STERILIZERS



MORE DENTISTS RECOMMEND

the PY-CO-PAY Toothbrush to their patients than any other toothbrush

The reason why Py-co-pay is favored by such a wide margin of the dental profession is because of its six-point appeal:

1. **Its small, compact head.**
2. **Its two rows of bristles, six tufts to a row.**
3. **The straight-trimmed design of its bristle tufts.**
4. **Its right-sized handle.**
5. **Its "duratized" natural bristles, increasing their life up to three times.**
6. **Its Py-co-tip interdental stimulator.**

Py-co-pay brushes are available with either natural or nylon bristles, as preferred.

Py-co-pay

TOOTH BRUSHES AND TOOTH POWDER

PYCOPÉ, INC. • JERSEY CITY 2, N. J.

Du Pont Dental X-ray Film

EXCLUSIVE PULL-A-TAB PACKET

ZIP... it's out

Saves time. It's quick. It's easy. You simply grasp the tab . . . pull . . . and the film is out. No bother. No fuss. You can attach film to hanger without touching the film . . . an advantage when processing a number of films with moist fingers.

As for exposure, Du Pont X-ray Dental Film gives you perfect negatives in less time . . . reduces tube wear . . . lessens patient dosage and minimizes motion by shortening exposures.

Try this fine film with its exclusive, time-saving "zipper-like" Pull-a-Tab Packet.

Ask your dealer for Du Pont Dental X-ray Film by name. E. I. du Pont de Nemours & Co. (Inc.), Photo Products Department, Wilmington, Delaware.

DU PONT
DENTAL X-RAY FILM

DU PONT

REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

S. S. White HAND

SMOOTH RUNNING • HIGHLY EFFICIENT •

★ REVELATION

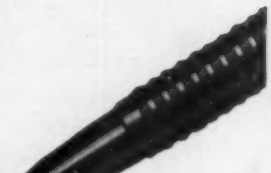
Sturdy and rust resistant. Built for those who want top performance in a handpiece—who are meticulous in cleaning and sterilizing them, and want the simplest, easiest, and quickest possible way to take apart and re-assemble. A Revelation Handpiece can be taken apart and re-assembled in 20 seconds or less . . . without tools. All surfaces of every part come into contact with sterlizing agents, and are highly resistant to rust and stain. It is as facile as a pen in hand; is designed and built to give complete satisfaction.

★ S. S. WHITE DORIOT

A moderately priced handpiece which has an unblemished record of many years to recommend it. Light in weight, perfect in balance, comfortable to hold. Wrist-joint accommodates slightest movement of the operator's wrist. Chucks and releases burs easily and quickly. Free manipulation, due to wide angle at which pulley joint can be worked. All metal sheath. External parts chromium-plated.

★ S. S. WHITE

An advanced Doriot design with durability the outstanding feature. Nosepiece, spindle, wrist-joint pulley wheels and shafts are nitrided; harder and more resistant to wear than steels subjected to ordinary heat treatments. The nitrided spindle is of one piece, assuring true alignment, minimum friction, less heat, long life. Can be taken apart and put together again quickly . . . without tools. Sterilizable in boiling water or oil; in an autoclave or standard cold solutions. Highly resistant to rust. Has no soldered parts. Provided with an effective means to prevent spinning of sheath. Universal latch attachment allows its use on any engine arm.



UNINTERRUPTED SERVICE

Duplicate handpieces and angles are not luxuries; they are insurance against lost time while sterilizing and cleaning and when repairs are necessary.

EFFICIENCY
AT YOUR FINGERTIPS

PIECES

DURABLE

REVELATION
No. 2 Hexagonal Nose
No. 3 Round Nose

DORIOT
No. 4 Round Nose
No. 5 Hexagonal Nose

S.S.WHITE
No. 9 Round Nose
No. 10 Hexagonal Nose

For Sale by Your Local Dealer

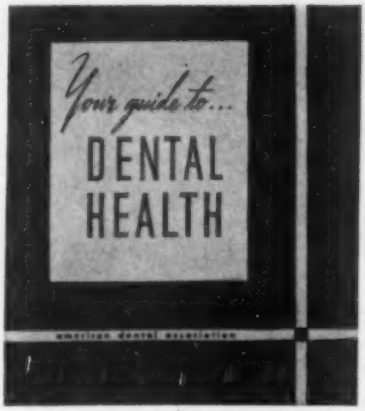
THE S.S.WHITE DENTAL MFG. CO.

PHILADELPHIA 5, PA.

Your Guide to DENTAL HEALTH

WRITE FOR YOUR SAMPLE COPY TODAY

Discusses 27 subjects concerning which questions are frequently asked:



Why we have teeth	Abscess
Structure and shapes	Dead tooth
Primary teeth	Gingivitis
Permanent teeth	Vincent's infection
Dental hygiene	Pyorrhea
Toothbrushing	Halitosis
Dentifrices	Cold sore
Mouthwashes	Canker sore
Other dental products	Cancer
Sodium fluoride	Occupational hazards
Diet and nutrition	How to select a dentist
Dental caries	Responsibilities of the dentist
Systemic conditions	X-ray examination

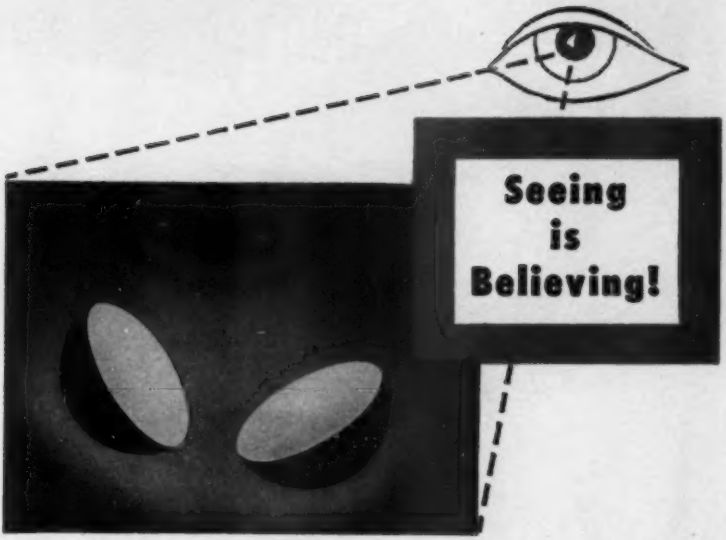
Artificial dentures

Prices: **25 copies, $2.95; 50 copies, $5.00; 100 copies, $8.60**

ORDER DEPARTMENT

AMERICAN DENTAL ASSOCIATION

222 East Superior Street Chicago 11, Illinois



Graphic evidence of remarkable impenetrability provides absolute assurance of a positive, enduring barrier against all possible destructive influences.

Add to this the obvious advantages of complete plasticity in a "thick mix"—*plus* the highest recorded crushing strength, density and resistance to solubility and disintegration ***even when used in the thinnest film,*** and you will know why Fleck's Cement is used by more dentists than any other cementing medium.

FLECK'S CEMENT

OXY-PHOSPHATE OF ZINC —11 COLORS PLUS BLENDING SHADES
RED COPPER — REF. DENTAL COSMOS, 11/1915, p-1209

Better Materials for Better Dentistry

MIZZY, INC., 304 E. 23rd St., New York 10

Marvel

OF PROFESSIONAL SKILL

but..

its merits are lost if it's left in the bureau drawer—instead of being kept in the patient's mouth.

Many patients, discouraged by the handicap of anatomical or psychological difficulties, find their confidence helpfully stimulated by the use of Wernet's Powder during the first critical weeks of adaptation. Its soft, resilient cushion improves retention and stability, and enables the patient to master the new denture more quickly and more effectively.

If you need office samples, use the handy coupon for a complimentary supply.

Wernet Dental Mfg. Co., Inc.
Jersey City 2, N. J.

WERNET DENTAL MFG. CO., INC.
Jersey City 2, N. J. DEPT. IB

Please send gratis an office supply of Wernet's Powder.

Dr._____

Address_____

City_____ State_____

WERNET'S POWDER

WERNET DENTAL LORE

FEBRUARY 1951

Dental professional income continues on an upward trend. In 1949, the U.S. Department of Commerce estimates that Americans spent $931 million for dental care, exclusive of expenditures by governmental or philanthropic organizations. This was 4% above the previous peak year of 1948. And the estimate for 1950 raises the figure to $1,100 million. Dentistry is now a billion-dollar profession!

• • •

During the past 20 years, the average freshman in a typical University has constantly improved in general physical health, but has increasingly retrogressed in dental health. Studies in 1929, 1939 and 1949 involving 3,400 to 4,400 students revealed an average of 9.96, 11.8 and 13.7 carious teeth, respectively, and 7.8, 8.8, 11.4 extractions.

• • •

J. C. F. Maury, of Paris, designed one of the first bridges that approaches our modern concept of replacement. In his "Traite complet de l'art du dentiste," published in 1828, he showed a 6-tooth anterior replacement anchored in the cuspid roots by posts placed in the pulp canals.

• • •

"Zene Artzney" (Remedies for the Teeth), published in 1530 by Michael Blum at Leipzig, is noteworthy not only because it is a monograph of dentistry as practiced 400 years before, but also because it bears the first known woodcut showing a tooth extraction.

• • •

The best quality of karaya gum, basic ingredient of Wernet's Powder, is collected from the Indian gum tree during the hot spell. The trees yield this exudation for 8 to 9 months and are then given a rest period of 2 to 3 years before tapping is resumed.

Speeds the Mastery of the Denture

announcing . . . .

THE SECOND EDITION OF THE AMERICAN DENTAL DIRECTORY

Available Now

- Lists more than 80,000 dentists alphabetically and geographically including street address, city and state.
- Shows general practitioners and specialists.
- Indicates dental school attended and date of graduation.

Included in this great directory is every dentist whose name can be verified. Invaluable for referring patients, looking up friends and classmates.

Should be on the desk of every dentist and everyone who does business with dentists.

FILL IN AND MAIL TODAY

AMERICAN DENTAL ASSOCIATION
222 East Superior Street, Chicago 11, Illinois

Please send me a copy of the new American Dental Directory. Enclosed is my remittance of $12.50.

Signed .....
Please Print or Type

Street .....

City ..... Zone.... State.....

LOOK

at the messages from leading dental manufacturers which appear in this issue of your Journal.

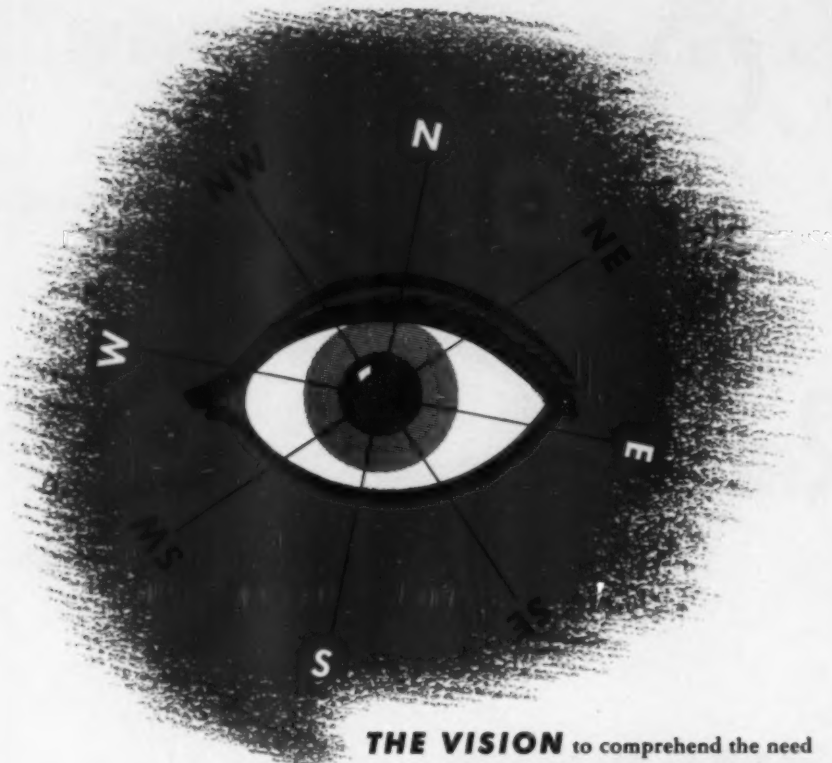
Read

what these manufacturers say about their products and equipment.

REMEMBER

that products to be advertised in your Journal must first pass the scrutiny of the American Dental Association's official standardizing agencies.

When ordering these products please tell your dealer that you read the advertising in your Journal.



THE VISION to comprehend the need for a new and better kind of laboratory service, plus the volition to accept the challenge and make the results *available to you.*

That's the underlying motive which prompted the CAL-LAB in your neighborhood to join other leading laboratories throughout the nation in forming the Cal-Lab group. And in creating a Central Research Organization for the purpose of seeking and developing the finest possible methods and materials for the finest possible restorations.

In doing so, your nearby Cal-Lab avoids the entangling limitations of politics and prejudices. Your Cal-Lab designs and builds your crowns and bridges, partials and full dentures to satisfy their individual case requirements. For this new and desirable service, call your Cal-Lab today.

The CAL-LAB Group

CERTIFIED AMERICAN LABORATORIES cal SERVICE ★

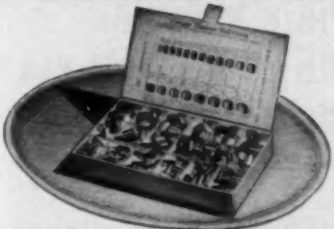
★ REG. U.S. PAT. OFF.

Do you read CAL magazine?
Ask your CAL-LAB to send it to you!

GOOD-GOODS IN A SMALL PACKAGE

ALUMINUM SHELLS EMBRACE SO MANY ADVANTAGES IN SO SMALL A "GADGET"

KING'S



UTILITY CASE (100) ILLUSTRATED $6.75
BOX OF 20 $1.50
ANY ASSORTMENT OR ALL ONE SIZE

Saves time and irritation for you and the patient when temporary protection of tooth or cavity is essential.
(a) They conform to any articulation and are necessary in (b) crown and bridge work and (c) protecting inlays. They protect (d) cavity preparation and (e) medication and withstand that (f) EXTRA PRESSURE desired when plastic filling material is used.

One of King's 200 Products

KING'S SPECIALTY COMPANY
Fort Wayne, Ind.

CLEANLINESS
IS IMPORTANT
IN DENTURES, TOO!
Continued cleanliness of dentures in the patient's mouth is as important as the sterility of an instrument in your hand.
PATIENTS APPRECIATE ITS
The BUTLER denture brush, with its special advantages, solves the problem of what you can recommend for maximum ease and efficiency in denture cleaning.
• lever grip handle
• long, full bristles
• flat brushing surface
• functional design
• lasting resiliency
• effortless handling
THE JOHN O. BUTLER COMPANY
540 n. lake shore drive • chicago 11, ill

the BUTLER TOOTH BRUSH—
Favorite for over 26 years

Strang-Orthodontia

By ROBERT H. W. STRANG, M.D., D.D.S.

Director of Courses in Orthodontia in the Extension Teaching Department of Temple University, Philadelphia; Director, Fones School of Dental Hygiene, University of Bridgeport; Co-editor, "The Angle Orthodontist"

New (3rd) Edition. Dr. Strang gives the reader not only a sound theoretical foundation in orthodontia, but includes complete and detailed instruction in clinical procedures, based on the most recent advances in this specialty. This edition contains new, revised and rewritten material on many phases of orthodontia, including growth and development of the facial structures, eruption of teeth and development of occlusion, endocrinology, and treatment technic.

825 Pages. 1050 Illustrations on 583 Figures and 5 Plates, 2 in Color. $15.00

Grossman-Root Canal Therapy

By LOUIS I. GROSSMAN, D.D.S., Dr. med. dent.

Associate Professor of Oral Medicine, The Thomas W. Evans Museum and Dental Institute, School of Dentistry, University of Pennsylvania

Third Edition. This recently revised standard text is based on the extensive experience of the author—a practitioner, teacher and researcher of wide renown. It offers a clear understanding of the root canal problem and of its application in specific situations. *Treatment* of pulpless teeth occupies the major portion of the text. Emphasis is on the many advances made by the use of antibiotic agents.

368 Pages. 267 Illustrations on 119 Figures. $6.50

Washington Square **LEA & FEBIGER** Philadelphia 6, Pa.

REST WHILE YOU WORK TO HAVE FUN WHILE YOU PLAY —WITH ROTA-SEAT

Rota-Seat gives you complete operating freedom —SITTING DOWN. It will add years, profitable years, to your professional career, because when you work sitting down you banish exhaustion, backache, bending and twisting stresses that can build up to serious organic disorders. You can take care of more patients, too, for you will need fewer rest periods.

Rota-Seat is the ORIGINAL operating seat for dentists (not merely a rest stool), you sit on deep, foam rubber, and roll easily to any operating position. More and more dental colleges are endorsing Rota-Seat's "sit-down" technique every day—send for fully illustrated booklet showing how to combat fatigue and live longer—the energy-saving, Rota-Seat way.

Ask your dental supply dealer to show you how easy it is to operate from a Rota-Seat in *your own* office. Thousands of satisfied users.

EXTRA COMFORT FOR YOUR PATIENTS, TOO . . . .

Instead of the patient holding his head in one position, forcing you to operate from many different, uncomfortable angles, the new Rota-Seat Head Rest permits turning the patient's head to offer easier access for the dentist, thus proving more comfortable for patient and dentist alike. The Rota-Seat Head Rest is adjustable to fit *any* type or make of chair. Made in one piece, large enough to accommodate any size head, of 1¼ in. thick foam rubber, covered with black vinylite to resist acids, water, oil, and all solvents, it can easily be kept clean by ordinary washing. Ask your dental supply dealer for details, or write us direct, giving your dealer's name.

rota-seat INC.

DENTAL EQUIPMENT SPECIALISTS
4606 W. 21st St. Cicero 50, Ill.

Don't do double duty, Doctor...
use LUXENE 44

Every time a denture is brought back to you for repair because of breakage of the acrylic material, the time, trouble and expense of the repair and the subsequent necessary adjustment are the *double* duty you do for that patient. And frequently the repaired denture breaks again, and again, and again which makes triple and quadruple trouble for you. All this is a waste you can correct by using Luxene 44. Luxene 44 dentures have long since proved to be the strongest and toughest—withstanding breakage, either from stresses in the mouth or accidents in handling. Further proof is the use of Luxene 44 for delicate partials and other types of cases in which no other plastic material is successful.

Make your cases "once and for all", Doctor—
Use Luxene 44.

LUXENE 44
the *Vinylite** Denture Base Material

*Registered Trade Mark

NEW.

Surgical Cuspidor shown above, standard cuspidor below.

Ritter Units with SURGICAL CUSPIDOR

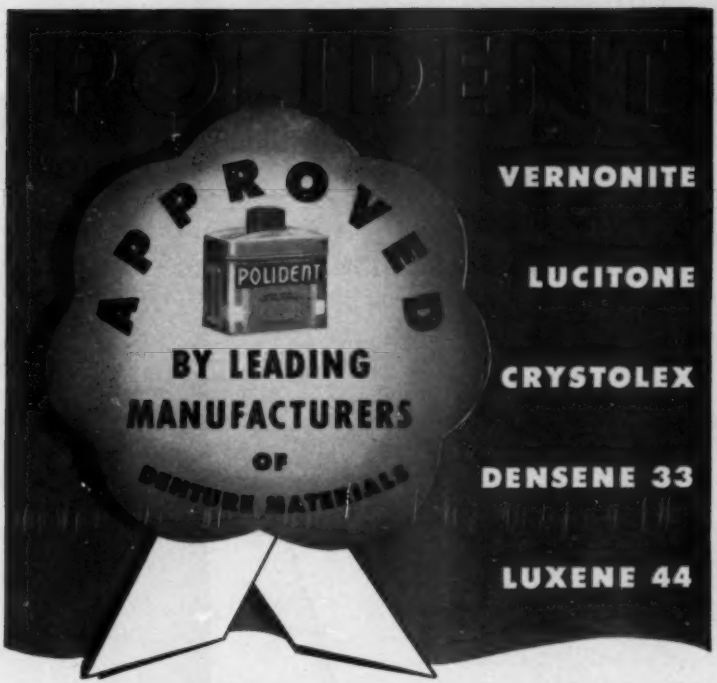
● Now you can have a Ritter Unit equipped with a Surgical Cuspidor *at no extra cost.* Units equipped with this Surgical Cuspidor offer greater cleanliness in use . . . positive suction in sufficient volume for the general practitioner as well as the oral surgeon. Be sure to see these Ritter Units on display at your dealer.

NEW greater volume of suction available from 0 to 25" of mercury. Easy-to-read precision gauge mounted right in front.

NEW drains directly into waste. No unsightly blood, mucous, etc., in cuspidor bowl. No unpleasant bottle to empty or clean. No strainers to clean or foul up.

NEW finger-tip valve control of vacuum. Tubing easily cleaned by flushing directly from special spigot.

EQUIPPED with standard saliva ejector tip and aspirator handle with tips.



All approve the use of Polident for cleaning acrylic restorations...for safely dissolving mucin, tarnish, food debris and odor...for retaining original lustre and beauty. Dentists, too, like the way Polident banishes the risk of dangerous handling, or of brush damage to delicately fitted ridges. Your patients will appreciate your suggestion of this easy "soak-and-rinse" Polident method—the *safe*, efficient way for helping dentures to "keep fit."

HUDSON PRODUCTS, INC. • JERSEY CITY 2, N. J.

Office Samples on Request

A-21

HUDSON PRODUCTS, INC., Jersey City 2, N. J.

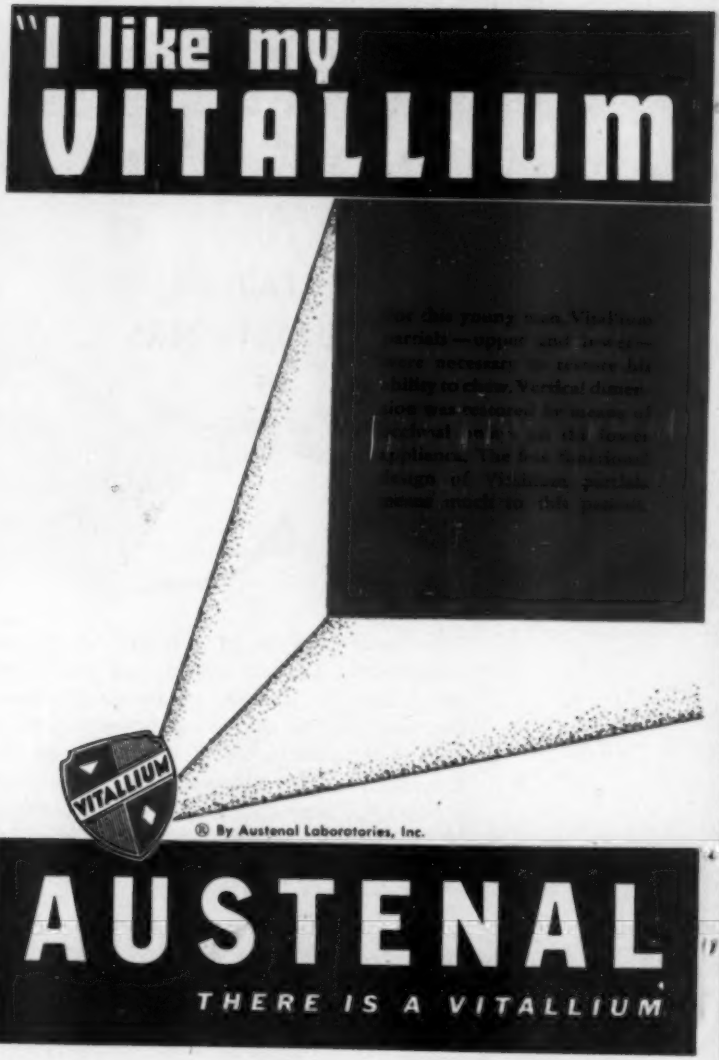
Please send me without charge or obligation a supply of office samples of Polident.

Dr. _____

PLEASE PRINT

Address _____

City _____ State _____


"I like my
VITALLIUM
VITALLIUM
® By Austenal Laboratories, Inc.
AUSTENAL
THERE IS A VITALLIUM

PRESCRIBE...

VITALLIUM PARTIALS

FOR GREATER PATIENT SATISFACTION
AND TO ENRICH YOUR PRACTICE

LABORATORIES, INC.

NEW YORK CHICAGO

LABORATORY NEAR YOU

Here's the SURE material for full denture impressions

because it's the ONLY elastic impression material specifically compounded for this purpose.

D-P THREE-IN-ONE CREAM...

IS ALSO widely and successfully used for Bridge and Indirect Inlay impressions.

IS IDEAL for either pressure or non-pressure technics . . . flows without pressure against tissue at rest . . . won't gag, run down throat or adhere to dry tissue.

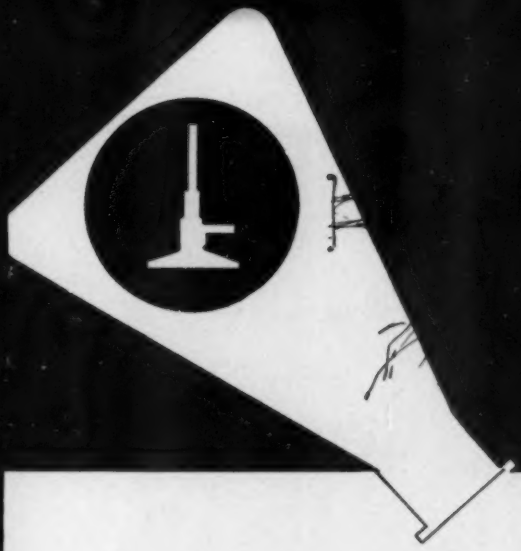
SETS to a *very* firm but resilient body, permitting withdrawal over any undercuts.

RETAINS the most minute details because texture in finished impression is identical to hydrocolloid.

Order from your Dental Dealer NOW

DENTAL PERFECTION CO.

543 West Arden Ave., Glendale 3, Calif.



Constantly busy at your chair?

For today's busy dentists, laboratory service is indispensable. And as a result of continuing scientific advances, laboratory service is now better than ever. Take, for example, the advances made by Caulk in *Lucitone.* More than ever, *Lucitone* gives your laboratory the physical properties and the *uniform composition* to assure success in every denture.

Be thankful
for
the
SKILL
of your **LABORATORY!**

you're sure when you specify

LUCITONE

For modern materials call on *Caulk* Milford, Delaware

Lucitone is the trademark of the acrylic denture material manufactured exclusively for dentistry from Du Pont resins

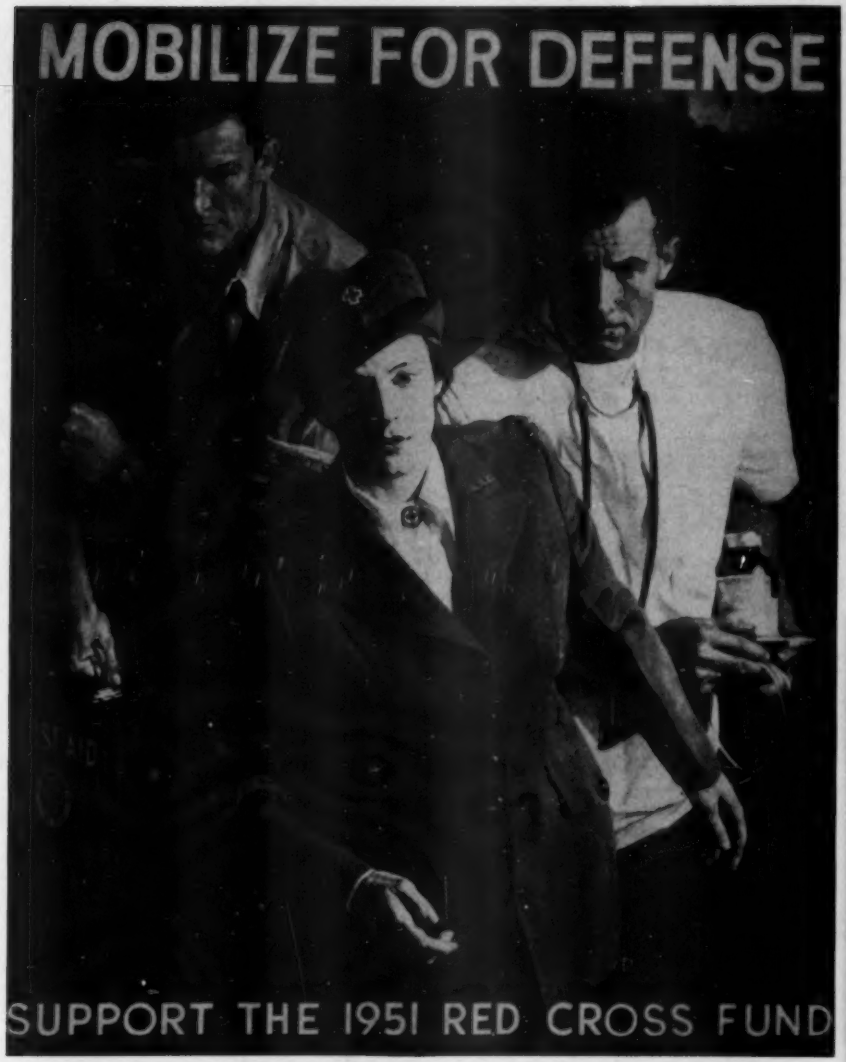
366 pages of indexed articles from 144 dental journals

Looking for a particular dental article? Or a number of references on dental subjects? You'll find them quickly and easily in this complete, comprehensive Index. It lists thousands of articles from all of the important journals published in the English language from 1945 through 1947. Australia, Canada, England, India, New Zealand, South Africa and the United States are covered. Authors and Subjects are given and cross-indexed for convenience. In addition, you'll find lists of dental texts and journals. Original articles, editorials, abstracts, papers discussed before Societies . . . *all* are here. Don't waste time looking for the proverbial needle in a haystack. Order your copy of this valuable Index. Only a limited edition was printed—so to make sure you get a copy, write today.

A valuable reference for Dentists, Dental Manufacturers, Pharmaceutical Manufacturers, and Libraries.

Only $10. *Order your copy today!*

Order Dept., American Dental Association, 222 East Superior Street, Chicago 11, Illinois



America's growing mobilization program is reflected in the 1951 Red Cross Fund appeal. This official National Red Cross poster, by Norman Rockwell, will be displayed throughout the nation during the month of March when Americans will be asked to contribute to the Red Cross to support its year-round activities. The overall fund nationwide goal for the American Red Cross is $85,000,000. Chicago, which has the world's largest Red Cross Chapter, is indicative of the general increase in the goal this year as a result of the Red Cross' heavily increased work load brought about by the Korean war and mobilization. The Chicago Chapter goal is up 24 per cent over 1950, and throughout the nation the Red Cross is preparing for constantly heightened service to civilians and men in the Armed Forces.

CLASSIFIED ADVERTISING

Forms close on 25th of second month preceding month of issue

Remittance Must Accompany Classified Ads.

Advertisements cost $3.50 not exceeding 30 words, additional words 10c each. Commercial agency advertisements, $3.50 for 20 words, additional words 13c each. Publisher reserves the right to determine classification. An extra fee of 25c is charged advertisers who have answers sent care of A.D.A. and in such cases we do not furnish name or address to inquirers. This rate applies for each insertion.

PRACTICES FOR SALE

FOR SALE: Well established dental office and laboratory. Equipment old but serviceable. Good location with low rent. Price reasonable and terms available to settle estate. Address Box 387, Montrose, Colorado.

●

FOR SALE: Thriving general practice, featuring Oral Surgery, established 30 years in same location. Four chairs, complete modern equipped offices and laboratory, newly redecorated. Exceptionally low overhead. Industrial Maine city. Owner leaving state. Address A.D.A. Box 11.

●

FOR SALE: Established practice in Northern Ohio. Pleasant college town. Modern equipment. Address A.D.A. Box 201.

●

FOR SALE: In Dayton, Ohio. Fully equipped office in excellent location on main street. Four rooms on first floor. Good equipment, reasonable price. Unlimited potential income. Address replies to Dr. B. L. Murphy, 2900 Athens Avenue, Dayton, Ohio.

OPPORTUNITIES AVAILABLE

WANTED: By philanthropic foundation, dentists under 40 years of age for public health work. Starting salary rate, $4,500.00 per annum. Michigan licensure not required, provided the individual is a graduate of an accredited dental school and is licensed in another state. For detailed information write Kenneth R. Gibson, D.D.S., M.S.P.H., Director, Child Health Division, Children's Fund of Michigan, 660 Frederick St., Detroit 2, Michigan.

●

WANTED: Associate in general practice. An excellent opportunity for the right man. Must be free from military service. Give full details as to professional background. Located in Central Illinois. Address A.D.A. Box 5.

●

WANTED: Resident in Oral Surgery and Dental Intern, beginning July 1, 1951. Applicants for Residency must have postgraduate or previous hospital training. Recent graduate accepted for Internship. Training in all surgical and related subjects. Applicants must be graduates of accredited dental schools. Address Executive Director, Sinai Hospital, Baltimore 5, Md. (Approved by A.D.A.)

●

WANTED: Dentist for mental hospital, eligible for Iowa license. Write W. C. Brinegar, M.D., Superintendent, Cherokee State Hospital, Cherokee, Iowa.

WANTED: Dentist with orthodontic training for association with orthodontist. Excellent opportunity for right man. New York license necessary. Address A.D.A. Box 12.

●

WANTED: Help of general practitioner. Will furnish equipment and supplies, percentage basis. Location, small Illinois town. Good opportunity. Address A.D.A. Box 13.

OPPORTUNITIES WANTED

ORTHODONTIST, experienced, good personality, seeks part-time association with orthodontist in New York City or suburbs. Address A.D.A. Box 7.

●

WANTED: Practice or location in Ohio. Prefer small town but will consider any worthwhile opportunity. Draft exempt. Address A.D.A. Box 14.

●

DENTIST, all around operator, 26 years old and in the very best of health, seeks foreign appointment. Will go anywhere. Address A.D.A. Box 15.

●

PHYSIOLOGIST, D.M.D., M.S. (physiology), experienced in dental and medical research, desires position on dental school faculty. Address A.D.A. Box 16.

●

WANTED: Full or part-time association by dentist with A.B., D.D.S. degrees. 41 years old, 16 years private practice, 9 years in City Clinic simultaneously. Draft exempt. Salary plus commission basis. Connecticut license. Address A.D.A. Box 17.

EQUIPMENT FOR SALE

FOR SALE: S. S. White pedestal cream white unit with following: engine, handpiece, gas, air, tumbler, spray bottles, temperature control, Castle light, adaptor, saliva ejector, vacuum breaker. Imperial Columbia chair. Wall bracket, laboratory motor, 12 inch sterilizer. $800. Direct replies to Dr. R. C. Locke, Orbisonia, Pennsylvania. Phone 53.

●

FOR SALE: S. S. White dental foot engine, "all cord," and portable cabinet. Both in excellent condition. Write Dr. G. E. Jones. Pekin, Ill.

MISCELLANEOUS

WANTED: Old Books—Orthodontia Journals; Old Dental Prints—Advertisements. Leo L. Bruder, 1 DeKalb Avenue, Brooklyn 1, N. Y.

Burneice Larson, Director
The Medical Bureau
Palmolive Building
Chicago 1, Illinois

OPPORTUNITIES AVAILABLE

WANTED—(a) Faculty members for following departments: bacteriology, clinical pathology, general pathology, pharmacology, prosthetics, operative dentistry; pedodontics; periodontics, dental anatomy, dental histology, crown and bridge.

•

(b) Associate by oral surgeon; California.

•

(c) Associate; general practice of dentistry; $700-$1000; vicinity Baltimore.

•

(d) Instructor or assistant professor, department of periodontology; should be well trained in the oral histology and oral pathology with clinical experience in periodontia and possibly in root canal therapy.

•

(e) Dentist with workable knowledge of chemistry or physics; research department; industrial company; duties consist of clinical evaluation cooperating on development and research in field of dental materials.

•

(f) Field dentist to conduct health education program; state department of health, West.

•

(g) Associate; general practice; Virginia.

•

(h) Associate; advantageous if interested children's dentistry; busy general practice; early partnership; college town, Massachusetts.

•

(i) Dentist to become associated with small hospital and clinic; $700-$1000 monthly; Texas.

•

(j) Associate; general practice; early partnership; town of 100,000, Illinois.

•

(k) Associate; general practice; suburb, winter resort city, Southern California.

•

(l) Pedodontist to become associated with dentist; university town, Midwest.

•

(m) General practitioner to become associated with several dentists; private practice; early partnership; Washington.

•

(n) Orthodontist to become associated with specialist located in university medical center; income first year around $6500, early partnership.

•

(o) Dentist for full time public health position; public health training unnecessary; university town; Midwest.

•

(p) Dentist for full-time hospital position; college town, South.

•

(q) General dentist to join dental department; 12-man clinic; winter resort area, Southwest.

•

(r) Dentist to take charge of department, well established group, near Chicago.

•

(s) Pedodontist to become associated with pedodontist well established in Michigan.

•

(t) Dentist; state hospital; five-room apartment available; $425, single maintenance $40, maintenance for dentist and family $80; West.

•

(u) General practitioner to become associated with well established dentist; minimum $500; early partnership; South Dakota.

•

(v) Pedodontist to become associated with several dentists engaged in general practice; Kansas.

•

(w) Orthodontist to become associated with dentist well established in one of Wisconsin's leading cities.

OPPORTUNITIES—HYGIENISTS

WANTED—(a) Dental hygienist; college town near Chicago; minimum $300.

•

(b) Dental assistant or hygienist; West Indies.

•

(c) Desirable position in Lancaster, Pennsylvania, available to dental hygienist or dental assistant: state qualifications in request for interview.

•

(d) Two dental hygienists; large hospital, university affiliations; Midwest.

•

(e) Dental hygienist and, also, dental x-ray technician; department of dentistry, fairly large group; resort area, Southwest.

The Medical Bureau (cont'd)

OPPORTUNITIES WANTED

Young dentist available for association in general practice of dentistry; graduate of Northwestern; two years' general practice; licensed, Texas, Illinois.

•

Dentist with several years experience on staff of small hospital is available for institutional appointment; three years' general practice; in thirties.

•

Oral surgeon; B.A., D.D.S., M.S. (Oral Surgery); several years' successful general practice before specializing; eligible for American Board.

•

Orthodontist; D.D.S. Northwestern; dental internship, university hospital; several years' successful practice before specializing; 15-month graduate course in orthodontics for which he received M.S.D. degree.

Pedodontist; M.S., D.M.D., eastern schools; eight years' teaching experience; two years, director, children's dental clinic.

•

B.A., D.D.S., leading university; now completing three years' graduate training in periodontia and oral pathology for which he will receive Master's degree; several years' teaching experience before entering dental school.

•

Prosthodontist; D.D.S., and M.S. in Public Health, eastern universities; year's research; six years, full time teaching, prosthetic department, university school.

•

Public health dentist; D.D.S., M.P.H., eastern schools; past several years on staff, state department of dentistry.

TM ALL-PURPOSE VIBRATOR

. . . for trays, inlays and HEAVIEST FLASKS!

At last . . . a vibrator with three speeds with full power to take care of every vibrator job in the office or the dental lab . . . from trays and inlays to even the HEAVIEST FLASKS.

Scientifically engineered, the TM, though only 4½" square is built for heavy duty laboratory use. Comes in green hammerloid or chrome finish. Foot control switch available at additional cost. Free literature available. Model 6H $17.50

TM Amalgamator with head, funnel and massager . . . $12.50

Wall Bracket $2.00

CONTROLLED AMALGAMATION

Small, medium or large mixes blended to bright, velvety texture in approximately 10 seconds BEFORE YOUR OWN EYES. Clear plastic head tells you exactly when mix is complete. TM amalgamator with massage element is used in the treatment of Pyorrhea.

TM MATRIX RIBBON

(.000 thickness)

- It's Stronger Stainless
- Super-Finished Smoother
- Visible Supply Available in 5/16", 3/8", 7/16", 1/2", 9/16", 5/8" 10 foot roll . . $.75

The TOOTHMASTER CO. RACINE, WIS.

NEW-TYPE TOOTH BRUSH

Specially Designed For Adequate Gum Massage Without Irritation

Three times more bristles, sufficiently firm for effective massage yet soft enough to avoid irritation to gums.

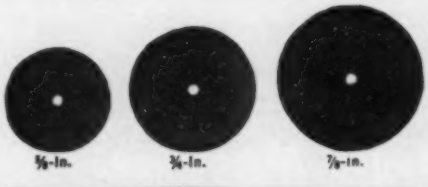
By using a much thinner bristle in the PRO "59," and packing three times as many bristles into the same small, rounded brush-head, we have achieved a combination of softness and firmness which we believe you will welcome.

We feel sure that when you have examined the PRO "59" you will be sufficiently impressed with its improved cleaning, polishing and massage action to want to recommend it to your patients.

☛ **We will gladly send you a sample brush on request. Prophylactic Brush Co., Florence, Massachusetts.**

PRO "59"

'Lightning' Strips & Disks



Cup Shape Disks (Cutting Inside or Outside)

The Tried-and-True "Old Reliables"

Fine steel, with a fast-cutting abrasive. Safe-sided.

STRIPS: fine, medium, coarse or assorted. 5¼ ins. long.

DISKS: fine, medium, coarse or assorted. Cup shape (cutting inside or outside) or flat.

Order from your dealer, or direct (specify dealer)

$1.75 Doz.

THE J. BIRD MOYER CO., INC.
Dental Manufacturers
Philadelphia 6, Pa.

---

the Surest Way to get Maximum Returns from Your Scrap . . .

SEND IT TO MOWREY'S

For more than half a century Mowrey's have been known for their careful grading and assaying, with prompt return in cash or new materials as preferred.

Send a Trial Shipment . . . Soon!

Write for latest price list of quality golds and silver filling alloys.

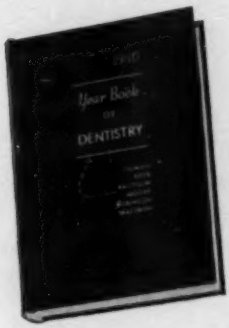
SINCE 1899 NO BETTER REFINERS THAN

W. E. Mowrey Company

1436 University Avenue St. Paul 4, Minnesota

TWO NEW BOOKS

Packed, Cover to Cover, with Help for Dental Practitioners



NEW 1950 YEAR BOOK of DENTISTRY

EDITED BY TYLMAN, KEYS, KNUTSON, MOORE, ROBINSON AND WALDRON—Why do you suppose 87% of all dentists who take the Year Book continue to get it annually? Because they have proved to themselves that through the Year Book they can secure much more worthwhile and usable information, in much less time and at much lower dollar expenditure than in any other way. Here, in one compact, easy-reading, moderately priced volume, is a complete presentation of the working essence of the year's best international journal literature covering new and improved methods directly applicable to the daily problems of the average dentist. See the New 1950 volume now and discover how tremendously useful it is in helping you utilize latest advances in your own practice.

Edited by Stanley D. Tylman, D.D.S., Donald A. Keys, D.D.S., John W. Knutson, D.D.S., George R. Moore, D.D.S., Hamilton B. G. Robinson, D.D.S., and Carl W. Waldron, M.D., D.D.S. 525 pages, 384 illustrations. $5.00, postpaid.

SARNAT & SCHOUR'S ORAL and FACIAL CANCER

40% of all cancers of the face, neck and oral cavity are first seen by the dentist. Today, tomorrow, a potential cancer victim may sit in your chair. Prepare yourself now for just such a situation with Sarnat & Schour's new book—a concise, postgraduate course in early diagnosis and treatment designed expressly for the dental practitioner. By Bernard G. Sarnat, M.D., F.A.C.S., and Isaac Schour, D.D.S., University of Illinois College of Dentistry. 304 pages; 236 illustrations on 118 figures and 12 color illustrations on 2 plates. $6.00, postpaid.

Use This Form to Ask for 10-Day Examination Copies →

The Year Book Publishers, Inc., 200 East Illinois Street, Chicago 11, Ill.

Please send me the following books, postpaid, for 10 days' free examination.

☐ **New 1950 Year Book of Dentistry, $5.00.**
☐ **Sarnat & Schour's Oral and Facial Cancer, $6.00.**

Name_____

Street_____

City_____ Zone____ State_____

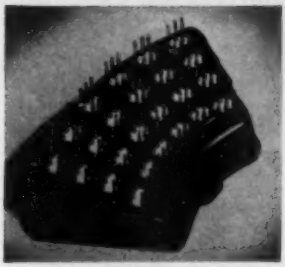
JADA 2-51

Atlas of Oral and Dental Pathology

4th EDITION

Clinical records, photographs, and histopathologic material gathered by the nations leading authorities. This wealth of material under one cover adds up to a "must" for the dental library. Primarily designed for the oral surgeon, the new Atlas of Dental and Oral Pathology is a ready reference source for many unusual conditions to be encountered in general practice as well as in the specialties. At present the Atlas is widely used by dental schools as a combined laboratory and academic text. Prepared by the Armed Forces Institute of Pathology, the new 4th edition contains 310 pages of authoritative information and is priced at $7.00.

Order directly from
ARMED FORCES INSTITUTE OF PATHOLOGY
Washington 25, D. C.



Ash
"BT" BUR ASSORTMENT

ASH BURS, made in England to British craft standards, have the *extra* quality which distinguishes all high-grade British products. Turned by skilled craftsmen from specially selected tungsten steel, Ash Burs are sharp for easier, faster cutting, and extra true for steadier, smoother running. Regular, Miniature and Taper Shank types are available in all usual shapes and sizes.

Place an order for fine Ash Burs with your local dealer today.

Claudius Ash, Sons & Co. U.S.A. Inc.
127-131 Coit Street — Irvington 11, New Jersey

Trade Distribution Agents in U.S.A. for
AMALGAMATED DENTAL ENGINEERING INDUSTRIES LTD., Walton-on-Thames, England

THE NAME "ASH" HAS IDENTIFIED FINE DENTAL INSTRUMENTS FOR OVER 130 YEARS.

Eliminate { ERROR . . . FATIGUE
HAND—PRESSURE

Save { TEETH . . . PAIN
TIME . . . TROUBLE

new

TOFFLEMIRE *FORM-FITTING*

ANTERIOR RETAINER

and *PRE-FORMED*

STAINLESS STEEL

BANDS

Non-yielding, Mechanical Pressure for Acrylic and Other Filling Materials

Here is a combination of a *form-fitting* Anterior Retainer and *pre-formed* Stainless Steel Matrix Bands which provide for the first time positive, non-yielding pressure for making denser, more compact, retentive and volumetrically stable anterior restorations. Permits use of thicker mixes of acrylic and other modern filling materials never possible with manual pressure. This new scientifically designed retainer is easy to use . . . quickly adjusted . . . LOCKS securely . . . and instantly removed. Made of non-corrosive, Stainless Steel to last a *lifetime*. Complete with a quantity of special pre-formed (pat. pend.) bands. Additional bands as needed at low price.

TRY IT AT OUR RISK! { Use this retainer for one week. If not 100% satisfied return it for full credit. Order from your dealer today or write us. }

WG

THE WILLIAM GETZ CORPORATION

DENTAL PRODUCTS

7512 GREENWOOD AVE. • CHICAGO 19, ILLINOIS

Our hands uphold the highest standards of quality in a denture adhesive; and our hearts the highest ideals of faithful service to the dental profession.

CO-RE-GA

CO-RE-GA IS NOT ADVERTISED TO THE PUBLIC

21-B

Accepted
COUNCIL on DENTAL THERAPEUTICS
AMERICAN DENTAL ASSOCIATION

Mail this coupon for your supply of professional samples

Dr. _____
PLEASE PRINT

Address _____

City _____ State _____

CO-RE-GA CHEMICAL CO. • 76 Mill Road, Jersey City 6, N. J.

INDEX TO ADVERTISEMENTS

February 1951

American Red Cross....A-61
Armed Forces Institute of Pathology....A-68
Abbott Laboratories....A-36
Acralite Company....A-25
American Cancer Society....A-28
American Dental Assn..3rd Cover, A-8, A-15, A-22, A-23, A-24, A-34, A-38, A-44, A-48, A-49, A-60
Ash & Sons Co., Claudius....A-69
Astra Pharmaceutical Products, Inc....A-26
Austenal Laboratories....A-56, A-57

Boos Laboratories, Henry P....A-27
Bristol Myers Company....A-7
Butler Co., John O....A-51

Castle Co., Wilmot....A-39
Caulk Co., The L. D....A-59
Childs Mfg. Co....A-37
Classified Advertising....A-62, A-63, A-64
Coe Laboratories....A-50
Columbus Dental Mfg. Co....A-4
Commercial Solvents Corp....A-33
Cook-Waite Laboratories....A-18, A-19
Corega Chemical Co....A-71
Cosmos Dental Products Inc....A-16, A-17
Crescent Dental Mfg. Co....A-11

Dee Division, Handy & Harman....A-1
Dental Perfection Co....A-58
Dentists Supply Co. of N. Y....2nd & 4th Covers, A-2, A-3
Dresch Laboratories....A-10
DuPont de Nemours & Co., E. I....A-41
Durallium Products Corp....A-21

Exakta Camera Co....A-13

Fleet Co., C. B....A-30

Getz Corp., Wm....A-70

Hatch Co., B. G....A-24
Hudson Products....A-55

Jelenko & Co., J. F....A-8
Johnson & Johnson....A-14

King's Specialty Co....A-51

Lea & Febiger....A-51
Luxene, Inc....A-53

Medical Protective Co....A-13
Mizzy, Inc....A-45
Mosby Co., The C. V....A-29
Moyer C., Inc., J. Bird....A-66
Mowrey Co., W. E....A-66

Novocol Chemical Mfg. Co....A-20

Pelton & Crane Co....A-6
Pepsodent Div., Lever Brothers Co....A-5
Physicians Casualty & Health Assn....A-11
Professional Printing Co....A-31
Prophylactic Brush Co....A-65
Pycopé....A-40

Reserve Plan Inc....A-35
Ritter Co....A-54
Rota-Seat, Inc....A-52

Ticonium....A-12
Toothmaster Co....A-64

U. S. Treasury Department....A-32

Wernet Dental Mfg. Co....A-46, A-47
White Dental Mfg. Co., The S. S....A-13, A-42, A-43
Whitehall Pharmacal Co....A-9

Year Book Publishers, Inc., The....A-67

A job to be done

Illness, accidents, and other unforeseen events each year bring hardship to an increasing number of fellow dentists —compelling them to call upon the A.D.A. Relief Fund for aid.

In order to bring even the barest essentials into the homes of needy dentists in 1951, the fund requires the support of every member of the profession. THE GOAL THIS YEAR IS $100,000. The need is great . . . your immediate contribution is vital.

WHERE YOUR MONEY GOES

One-half of your contribution to the A.D.A. Relief Fund is automatically allotted to your state society. In addition, the A.D.A. Relief Fund pays two-thirds of each grant. Your state and district societies pay the other one-third.

This Year Give More Through the A.D.A. Christmas Seal Campaign

SEND YOUR CONTRIBUTION TODAY TO THE AMERICAN DENTAL ASSOCIATION RELIEF FUND, 222 E. SUPERIOR STREET, CHICAGO 11, ILLINOIS

trubyte

teeth

A truly satisfying experience now awaits you.

Trubyte Bioform Teeth are the result of the most extensive research program ever undertaken by The Dentists' Supply Company. In its successful completion, the knowledge, experience and talents of prominent prosthodontists and scientists were employed. Never before have artificial teeth been available that are as lifelike and as durable as Trubyte Bioform Teeth.

NEW IN EVERY WAY TRUBYTE BIOFORM TEETH

● Exact copies of attractive natural teeth ● Each size a duplication of another set of natural anteriors ● Harmonize with the outline form of the face, profile and cheek planes ● "Vacuum fired porcelain" — denser, stronger and more "alive" in appearance ● New blends in Trubyte New Hue Shades — react to all lights as do natural teeth ● The shades are approximate reproductions of Trubyte New Hue Shades. There are slight variations in the shades of Trubyte Bioform Teeth as is characteristic of fine, natural teeth ● New pin position — increases the retention of the tooth and adds to its strength ● The fully formed linguals are comfortable to the tongue and aid phonetics.

You can depend on Trubyte